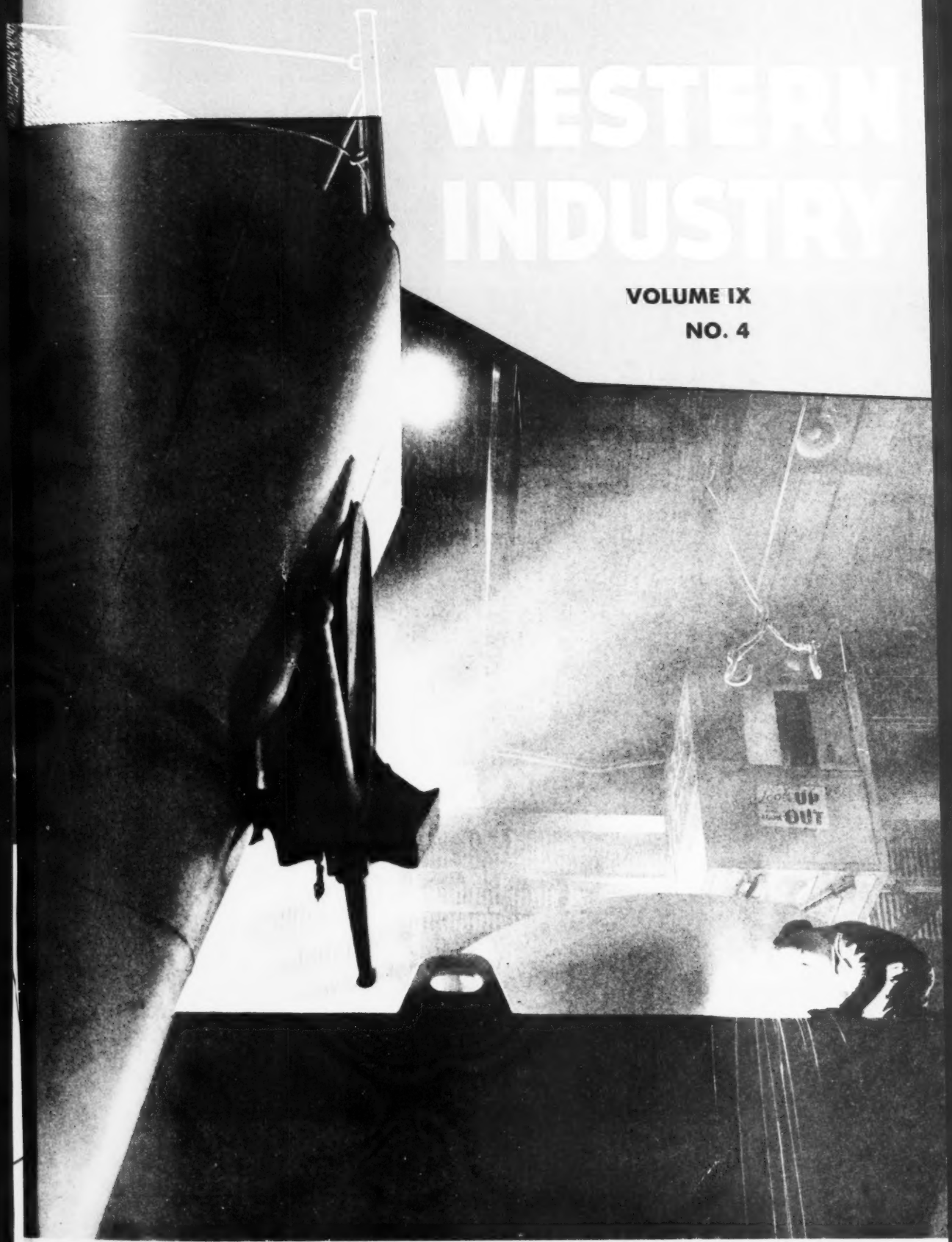
WESTERN INDUSTRY

VOLUME IX
NO. 4



* Pacific Coast yards are humming with landing craft construction. For details of illustration see page 5.

Twenty-Five Cents

April, 1944

10,000 LITTLE VICTOR FLAMES

Portion of the Small Parts Welding Department ... courtesy of Douglas Aircraft Company

10,000 active little VICTOR welding torch flames in the hands of 10,000 experienced men and women welders perform a vast job in the welding and brazing of the myriads of small parts and structures entering into aircraft and other vital war materiel.

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VICTOR DISTRIBUTORS FROM COAST TO COAST

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ARMY E NAVY

for men and women

WATCHEMOKET eye SAVERS

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The optically clear, shatterproof, all-plastic safety goggle for industrial eye protection

THE ONLY GOGGLE WITH ALL THESE FEATURES:

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2. OPTICALLY PERFECT. Free of distortion as finest optical glass. Eliminates eye strain and fatigue common with acetate plastic lenses.

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6. LENS EASILY REMOVABLE.

7. FEATHER LIGHT. Cool, clean, comfortable for all day wear Weighs only 1 to 1-¾ oz.— a vitally important factor with women, who will not wear a heavy goggle.

8. LOW INITIAL COST. And new lenses are inexpensive . . . an important saving in the long-term cost of eye protection.

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MODEL No. 1 for WEAR OVER PRESCRIPTION GLASSES

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The American Forge Company makes forgings of every description ranging in size from ½ lb. to 150,000 lbs. — Press Forgings, Open Hammer Forgings and Drop Forgings—forgings of Carbon Steel, Alloy Steel and Stainless Steel. The plant is one the largest and most modern in the United States.

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EDITORIAL COMMENT

Winning the War—Slowly or Quickly?

WARS are won by offensives. Hardly were we in this one before plans were laid for invading Africa and Europe, for driving the submarines to cover, for turning Japan's navy back on its heels and blasting its soldiers out of their far-flung ring of captured islands, for regaining the Philippines.

Everybody recognizes the offensive as the way to win, surely, quickly, cheaply. A defensive military and naval attitude is laughable.

But is it recognized that a defensive attitude regarding civilian manpower delays the day of victory, the day of returning our men homeward?

When an employer takes the attitude "My production is essential to the war effort; therefore the Government should try to help me keep my men," is he on the offensive or the defensive regarding the war?

Should he not rather say "Let the army take my eligible men. Its need comes first. If I throw my energy into finding a way to get along with older men, with women, with part-time workers, won't the war be over that much sooner and the whole problem of production be solved, once and for all?"

The time and energy spent in fighting to the last ditch against the call of the armed services for more men would be enough to work out many a practical scheme for doing without them.

Actually, a recognition that the call of the armed services is an inevitable one is only common sense. Employers who saw the handwriting on the wall a long time ago practically have no trouble at all today, because they have picked out the cream of the substitutes and gotten them well broken in. Each month the quality and quantity of the available supply of manpower decreases, and the employer who waits the longest will suffer the most.

Every inducement should be offered to women, because they constitute a comparatively large and unused reservoir of labor. It may take longer to train them than it does men, but employers on the Pacific Coast are in no position to be too choosy today, with an increasing pressure on them to back up the big push in the Pacific with their production.

It should be more widely recognized also that the wives of service men who have come to be near their husbands, either while in camp here or to see them when their ships put in to port or their units return from overseas, are needed in the war effort. They use up our housing accommodations, help eat up our food supply, and fill our trains, streetcars and buses. Consequently every unemployed wife in this class occupies space and uses facilities that otherwise would be available to an employed person. They are willing to help in practically every case; what they need is the encouragement and the assistance that will make them good war plant employees.

Ask the Modern Solomon

A PRECEDENT already exists for deciding who shall be allowed to engage in civilian production, the former manufacturer who has been tied up with war production, or the newcomer who sees a good opportunity. It is in the Motor Carrier Act, which created "grandfather rights" to haul passengers, express or freight in interstate commerce on the public highways, if the carrier was so engaged, and over the routes in question, as of a certain date in 1935. New rights are granted only upon showing of public convenience and necessity. Is averting temporary chaos worth sacrificing the principle of free enterprise?

WESTERN INDUSTRY

News, Methods, Solutions to Problems of the Principal Manufacturing and Processing Industries of the West

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OUR COVER PICTURE

• Construction of landing craft is one of the most important items of naval construction on the Pacific Coast, making up in large measure for the transferring of the construction of larger warships to the Atlantic and Gulf Coasts. The cover picture was taken during the building of an LCI(L) 732, i.e., Landing Craft Infantry (Large) at the Commercial Iron Works, Portland. This type of ship is about 150 feet long, has a beam of approximately 25 feet, and draws very little water, as these boats go right up on the beach.

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POWER INDUSTRIAL TRUCKS

"...and change the water in my crankcase, please"

Yes, you *could* use water to lubricate your engine—if you drove very slowly and didn't go far. For water does have some lubricating qualities and it is an acceptable coolant.

In fact, the earliest cutting fluid was water—a man named Taylor having discovered, back in 1880, that if he let water pour over the metal, it allowed faster cutting speeds and better operation.

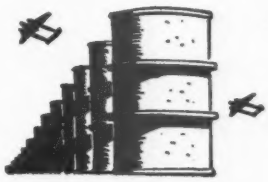
But the slow cutting speeds and soft metals of 64 years ago are hardly to be compared with the tough alloys and precision, high-speed cutting of today... Today, you would be wise to use Union Oil cutting fluids.

For in 1943, Union Oil Company placed on the market a *completely new* line of cutting oils, designed to meet every requirement of the machining world. Union's cutting oils facilitate rapid heat transference, keep the job cool and prevent

burned metals and seizure between chip and tool. They have excellent lubrication qualities and their resistance to oxidation is unexcelled.

Union Oil's cutting fluids protect against corrosion of metals and machinery and they are noninjurious to the skin.

There is a Union cutting oil for every type of operation from soft aluminum and magnesium to the toughest manganese steels. If you want cutting fluids that are laboratory designed to do *any* and *every* job—and if you like to buy from a single source—phone a Union Oil Company Resident Manager in any



of the five Western states or write Union Oil Company of California, 617 W. 7th Street, Los Angeles, California, Zone 14.

UNION CUTTING OILS

Union Oil Company—maker of 492 quality products—is the largest independent oil company in the West.

Everything for Pipe Lines - - you can get it from Crane

One high standard of quality throughout . . . One source of supply . . . One responsibility for all materials

WHEN you need a single fitting or a piping system, you stand a better chance of getting exactly what you need from Crane. The unusual completeness of the Crane line sees to that—as indicated by this boiler feed hook-up. Not only the valves and fittings, but all pipe, pipe bends, and other materials are supplied by Crane.

For an example of the superiority of these materials, take Crane cast steel wedge gate valves. Straight-through ports minimize turbulence, erosion, and resistance to flow. Strong tee-head disc-stem connection, easily lubricated ball-bearing yoke, and ample non-corrosive stem bearings assure smooth operation. The disc is fully guided and accurately seated by extra long guide ribs.

Yet all Crane products have similar characteristics of modern design that mean better performance and greater freedom from trouble. Choose all your piping needs from the world's largest selection—with quality assured by Crane Co.'s 89-year leadership in the piping materials field.

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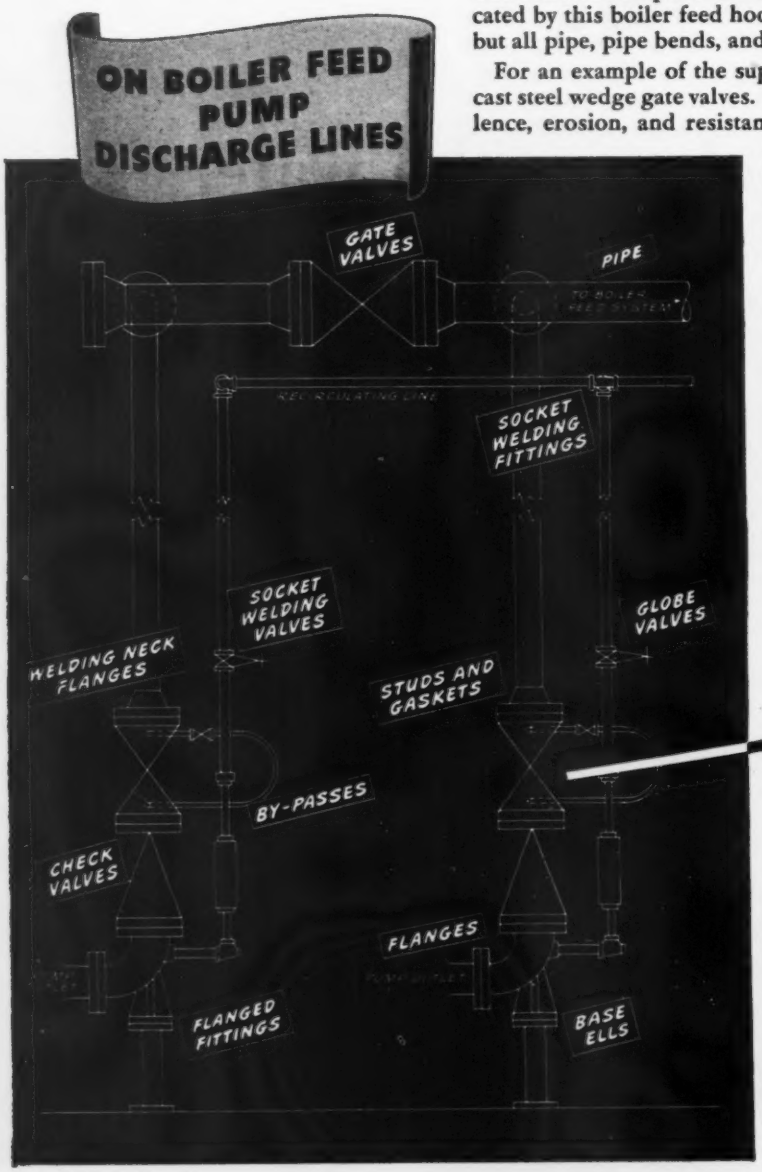
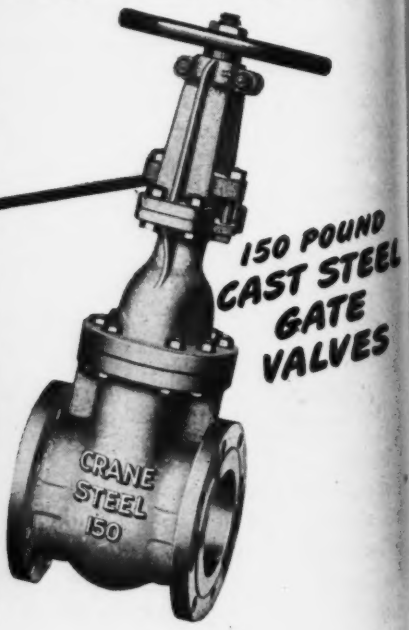




CRANE

VALVES • FITTINGS • PIPE
PLUMBING • HEATING • PUMPS

Wire SHOULDERS THE LOAD

IN YOUR HOME, in industrial plants, on world battlefronts, individual wires no heavier than a hairpin are standing between comfort and misery, delivery or non-delivery, victory or defeat. The individual wires that go into a wire rope or electric cable—a vital gun spring—a screen used in industrial equipment or to stop tropical insects...

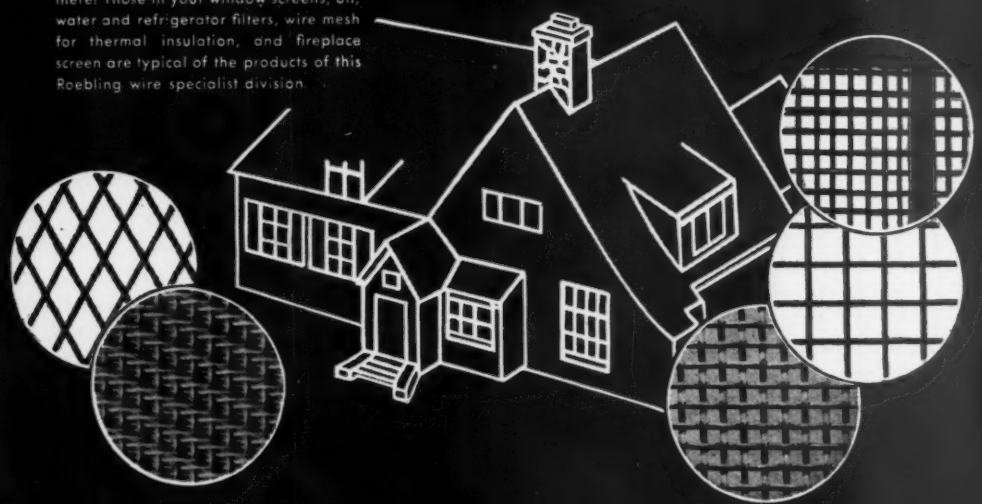
These little wires function as a team...and you can forget they exist as individuals. Because Roebling never forgets, and the full power of wire specialization is devoted day and night to their production. Tons of equipment...years of know-how...hundreds of men whose skill in wiremaking is a family tradition. The kind of wiremaking facilities you want when you say:

It's a job for the Pacemaker!

JOHN A. ROEBLING'S SONS COMPANY
OF CALIFORNIA
San Francisco • Los Angeles • Seattle • Portland

THERE'S NO PLACE LIKE HOME

To take wires for granted—yet look at the woven wires alone that work for you there! Those in your window screens, oil, water and refrigerator filters, wire mesh for thermal insulation, and fireplace screen are typical of the products of this Roebling wire specialist division.



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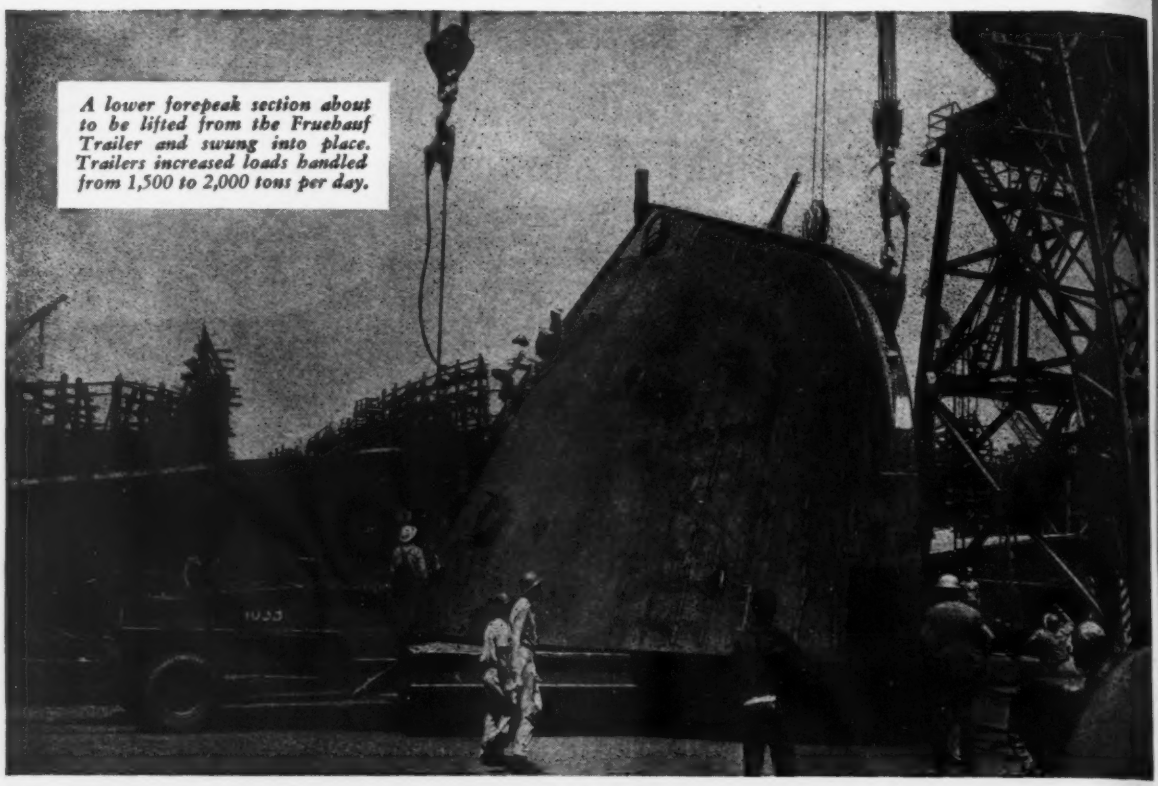
AIRCORD, SWAGED TERMINALS AND ASSEMBLIES • SUSPENSION BRIDGES AND CABLES • ELECTRICAL WIRES AND CABLES
WIRE CLOTH AND NETTING • HIGH AND LOW CARBON ACID AND BASIC OPEN HEARTH STEELS



A lower forepeak section about to be lifted from the Fruehauf Trailer and swung into place. Trailers increased loads handled from 1,500 to 2,000 tons per day.

TRUCK-TRAILERS SPEED SHIP CONSTRUCTION by moving sub-assemblies faster!

TO BUILD ships faster, it is necessary to bring heavy prefabricated sections from sub-assembly points to the hull in the speediest possible manner.

California Shipbuilding Corporation solved the problem of moving these tremendous sub-assemblies by using Fruehauf Trailers.

Formerly the big sub-assemblies were picked up and passed along from one elevated crane to another until they reached the ways—smaller sub-assemblies were passed along between the legs of the cranes.

New Transport System

To speed up movement of larger assemblies, an entirely new system of transportation was devised. The access area was widened . . . the cranes removed . . . and huge Trailers, designed and built by Fruehauf, put into service.

These Fruehaufs can carry a complete forepeak and are also used for transporting rear assemblies, bulkheads and other heavy units. In fact, a section the full width of the hull can now be brought in, whereas the width had previously been limited to 19 feet.

The Trailers can be pulled by regular truck-tractor or, by using a detachable running gear under the front end of the Trailer, a yard tractor can be employed. This eliminates the necessity of waiting until a definite piece of tractor equipment is available.

Big Increase in Tonnage

Officials of Calship state that tonnage handled has increased from 1,500 to 2,000 tons per day since the Trailer method was installed.

Shipyards offer unusual problems in bulky and heavy loads, thus furnishing an outstanding example of Trailer adaptability to difficult specialized hauling jobs. Calship's experience is typical of thousands of others in more than 100 lines of business, where Truck-Trailers are doing work that couldn't be done as well, if at all, by any other method.

World's Largest Builders of Truck-Trailers • Western Manufacturing Plant, Los Angeles

FRUEHAUF TRAILER COMPANY

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"ENGINEERED TRANSPORTATION"
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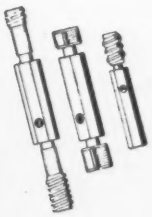
"GO"-Common Denominator



For Fractionating a City

Whether bomb-sight or bomb, rifle or bullet, mortar or shell—all the implements of war must receive the "GO" of positive accuracy by precision gages before they are accepted for service. For the systematic destruction of enemy strongholds, for the achievement of the objective, accuracy and dependability are indispensable when a dud may mean disaster. That's why the employees of Kobe, producing gages which assure matchless performance in our fighting weapons, consider themselves fighting men and women.

Gage manufacturing is an exacting science. It requires precision production under conditions of controlled temperature and humidity. Laboratory research and analysis . . . special machines and tools . . . master gaging instruments . . the deftness of skilled operators . . . and, experience, the most important of all. These are, every one, essential in the making of high-accuracy gages. Kobe, with years of experience behind it, by constant and continuing efforts to improve manufacturing methods and processes, is a leader in the production of gages assuring exact conformance to rigid specifications.

Although the largest share of current production is for use in the war effort, the extreme care exercised in the manufacture of Kobe Master and Reference Gages will be available to you for your post-war operations. The planning, the skill, and the experience acquired now, under the stimulation of wartime needs will be the basis for unexcelled production facilities after the war is won. The expanded plant and modern methods developed to the fullest during war time, will be ready for the manufacture of gages that will meet the highest standards of accuracy demanded by peace-time industry. Kobe's gage developments of today will be industry's peace-time assets of tomorrow.

KOBE

Master and Reference GAGES

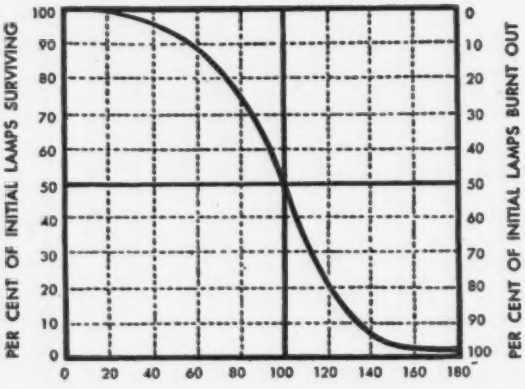
KOBE, INCORPORATED
3040 East Slauson Avenue • Huntington Park, California

Fluorescent operating hints

No. 2 of a series published by SYLVANIA for all users of fluorescent lighting

HOW TO GET FULL LAMP LIFE

Average rated life of good-quality fluorescent lamps is 2500 hours for the 40-watt size — 3000 hours for the 100-watt size. But the life of individual lamps may vary as the chart shows:



And actual operating conditions seldom are as favorable as controlled laboratory tests. Nevertheless, these average rated life figures will help you estimate how many lamps you will normally replace every month. Simply use 2500 or 3000 hours as indicated in this formula:

$$\text{Expected lamp renewals per month} = \frac{\text{No. of lamps} \times \text{average burning hours per month}}{\text{Rated average life of lamps in hours}}$$

If your actual monthly replacements consistently exceed the calculated figure in your own formula, it will pay you to check these five factors, which shorten lamp life:

1. TOO FREQUENT STARTING: Average rated life is based on lamps operating for not less than four hours every time they are started. More frequent starting dissipates the filament coating vital to fluorescent performance — and thus shortens lamp life.

2. DEFECTIVE STARTERS: Starters that are not working properly may cause the lamp to blink off and on, a condition that also shortens lamp life. Sylvania Starters cost only a few cents and should be replaced as necessary to protect your lamp investment.

3. VOLTAGE VARIATIONS: Fluorescent lamps are made to operate within specified *ranges* of voltage — for example, 110-125 volts. Variations within the specified voltage range do not seriously affect a lamp. But at voltages much below the range, starting becomes uncertain, and there is an excessive drain on electrode material — with a resultant toll on lamp life. Above the normal range, there is also a life-shortening effect. In addition, light output also is affected by voltages outside the normal range.

4. LOW TEMPERATURE: Fluorescent lamps are designed to operate most efficiently between 60 and 90 degrees Fahrenheit. If low temperatures are unavoidable, lamps may be protected with enclosed fixtures.

5. EXCESSIVE VIBRATION: This reduces lamp life and can often be prevented or minimized.

For Additional Maintenance Information

Send for this Free Booklet

100,000 already distributed

SYLVANIA ELECTRIC PRODUCTS INC.

"Fluorescent at its Finest"

SALEM, MASSACHUSETTS

FLUORESCENT LAMPS, FIXTURES AND ACCESSORIES, INCANDESCENT LAMPS, RADIO TUBES, CATHODE RAY TUBES, ELECTRONIC DEVICES

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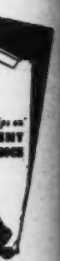


INC.

EVICES

ril, 19

MEMO NO. 1 FROM POMONA PUMP'S DATA BOOK

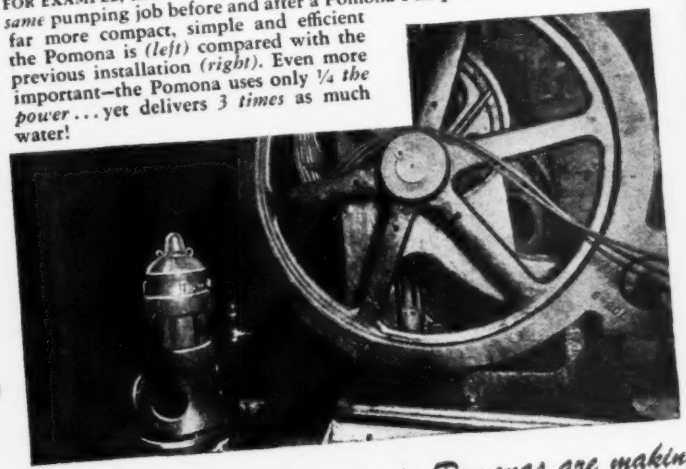
The importance of pump power to YOU!

IN war—and peace— pump power is about as important to man as water itself. Wherever man exists there must be water. And wherever there's water there must be some means of lifting and moving it. That's where pumps fit in... *for pumps* POWER *water!*

They lift water up out of the earth to nourish crops. They push rivers over mountains to supply cities. They feed water into the boilers of giant power plants... or through complex chemical operations... or through vital food processes. *In short, pumps are one of the most basic requirements of modern civilization!*

So regardless of what you do or make, pumps probably play an important part somewhere—and it's wise to know some fundamental facts about pumps...

FOR EXAMPLE, there is a great difference in pumps. This photo shows the *same* pumping job before and after a Pomona Pump took over. Note how far more compact, simple and efficient the Pomona is *(left)* compared with the previous installation *(right)*. Even more important—the Pomona uses only ¼ *the power*... yet delivers 3 *times* as much water!

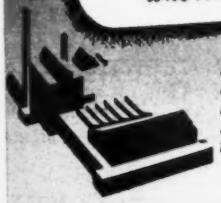


This is typical of the savings Pomonas are making wherever water is pumped - the world over!

Quick Facts

- **POMONA PUMPS ARE TROUBLE-FREE.** Fully water-lubricated, Pomonas have no oil or grease tubes to leak or contaminate water supply!
- **POMONA PUMPS ARE ADJUSTABLE.** No need to adjust pump capacities by wasteful throttling of flow. Pomona capacities are adjustable to requirements, with proportionate savings in power!

There are many other Pomona advantages. Send for descriptive literature.



Pomona Pumps are one of the many types of mechanical, hydraulic and electrical power equipment produced by Hendy Divisions. Other products include Hendy steam turbines and Diesel engines, Westco pumps, and Crocker-Wheeler electric motors and generators.

POMONA PUMP DIVISION

JOSHUA HENDY IRON WORKS

ESTABLISHED 1856

POMONA, CALIFORNIA

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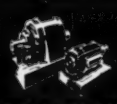
POMONA PUMPS — Oceans of Water

Hendy Products



MOTORS & GENERATORS
CROCKER-WHEELER DIVISION

VERTICAL TURBINE PUMPS
POMONA PUMP DIVISION

HORIZONTAL TURBINE PUMPS
WESTCO PUMP DIVISION

STEAM TURBINES, DIESELS
JOSHUA HENDY DIVISION

"Let's See—Where Did We Put That Jones Shipment?"

Poor Witherspoon! Finding a needle in a haystack is easy, compared with *his* job!

With the proper records, he'd locate that part in jig time. For, in any plant—or business—records help management keep tab on every order, every item, in every stage of its progress.

That's why thousands of businesses, in these days of higher wages and scarce help, use Uarco records—tool orders, tracer forms, production and material requisitions, work orders, inspection reports—to keep the work moving in an orderly, routinized way.

Uarco has developed ways to make every business operation faster, more efficient, more accurate, through the use of better records, whether you use handwritten (autographic register) records or continuous typewritten forms.

It may be that you have a special record problem. Uarco representatives will gladly consult with you in order to devise new and better time-saving forms. Put Uarco's years of experience to work for you in achieving new and important economies.

UNITED AUTOGRAPHIC REGISTER COMPANY
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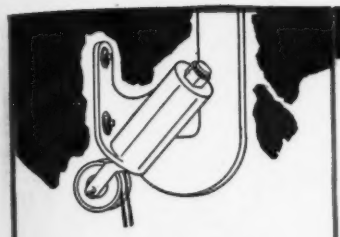
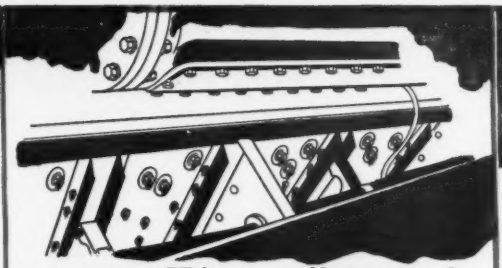
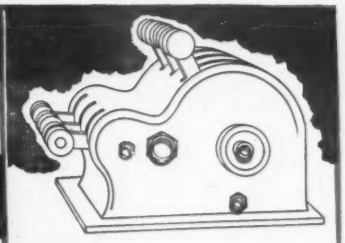


THROTTLE EQUALIZER MECHANISM fastened with Elastic Stop Nuts keeps throttle settings the same, even when the hull is distorted by heavy seas.



ENGINE BEDS. PT boats are a blasting mass of power. Besides, stresses and strains make the hulls weave. So, to hold the engines tight and secure against vibration and other forces, they are fastened down with Elastic Stop Nuts.



ENGINE ROOM SIGNALS and engine controls center in this unit held firm and secure with Elastic Stop Nuts.

Courtesy of Higgins Industries

GRIPPING TIGHT ON THE BATTLING COCKLESHELLS

They're swift. They're light. They're crammed with 4,000 throbbing horsepower that drives them, fighting like demons, through giant seas at breakneck pace.

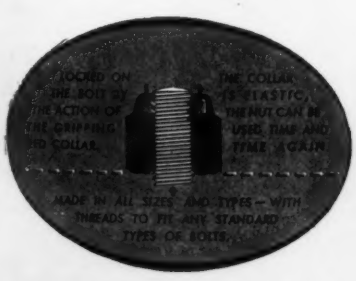
Naturally they take an awful beating.

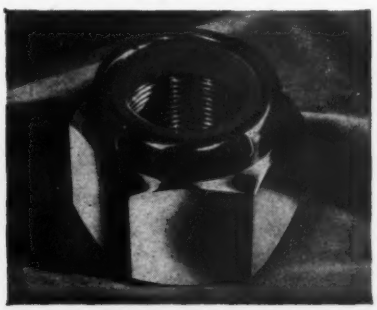
Under such shock and vibration only the surest fastenings will hold. That's why throughout Higgins Boats you'll see the famous red collar that marks Elastic Stop Nuts.

These nuts hold fast in the face of the worst vibration. This is accomplished by the elastic collar built in the head of the nut. This collar grips the bolt — presses itself between the bolt threads and holds tight. The nut can't wiggle. It can't turn. It can't shake loose.

These nuts will work wonders in peacetime uses. They'll make products safer, stronger and longer-lasting. They'll keep production equipment working with fewer inspections, take-ups and replacements.

Get the facts from our engineers. They'll gladly tell you about Elastic Stop Nuts and sit down with you to help work out any fastening problem you have.


LOCKED ON THE BOLT BY THE ACTION OF THE GRIPPING RED COLLAR.
THE COLLAR IS ELASTIC, THE NUT CAN BE USED TIME AND TIME AGAIN
MADE IN ALL SIZES AND TYPES — WITH THREADS TO FIT ANY STANDARD TYPES OF BOLTS.



ELASTIC STOP NUT CORPORATION

Gentlemen:

Torpedo boats must be built to stand terrific punishment — not only from heavy seas, but from vibration of engines, machine guns and depth charges. Precious time in maintenance and a greater sense of security are gained by the use of Elastic Stop Nuts at all vital points. Weight is also at a premium in PT's as in aircraft and prohibits the use of more cumbersome and less positive locking methods.

Yours very truly,

Jed S. Mague

PROJECT ENGINEER, HIGGINS INDUSTRIES, INC.

ESNA

TRADE MARK OF

ELASTIC STOP NUT CORPORATION OF AMERICA

ELASTIC STOP NUTS

Lock fast to make things last

UNION, NEW JERSEY AND LINCOLN, NEBRASKA

NO...IT'S REALLY pH THAT DOES THE CLEANING!

THE "CURE-ALL" is a great idea—but it won't work. Today, in your business and in ours, we know that it takes a "specific" to make a cure or get a job done right.

One Does The Work Best

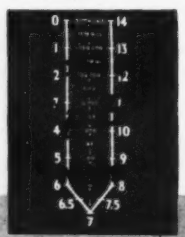
In every processing and cleaning operation there is one specific chemical combination which precisely fills the requirements of a particular situation and will do the job best. The difference between this correct material and anything else — even the closest approximation—is extreme. Kelite sees it every day in reports from Service Engineers in the field. You can see it in the unequalled speed, certainty and economy which the correct material makes possible.

pH Simplifies The Job

This matter of the right material for the job is so important that Kelite has gone to great lengths to attain it. Formerly, standardized test tubes of correct solutions were made up in the laboratory and used as models on the job. All this work was worth while, but it was slow . . . until we learned how to make use of pH. Now it's simple!

No Special Skill Needed

An operator does not have to be skilled to use Kelite pH Control. The pH values are lined up and compared in an easily-understandable form on the Kelite pH Chart. It's as easy to use as a yardstick! Your inquiry is invited.



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Kelite Products, Inc.
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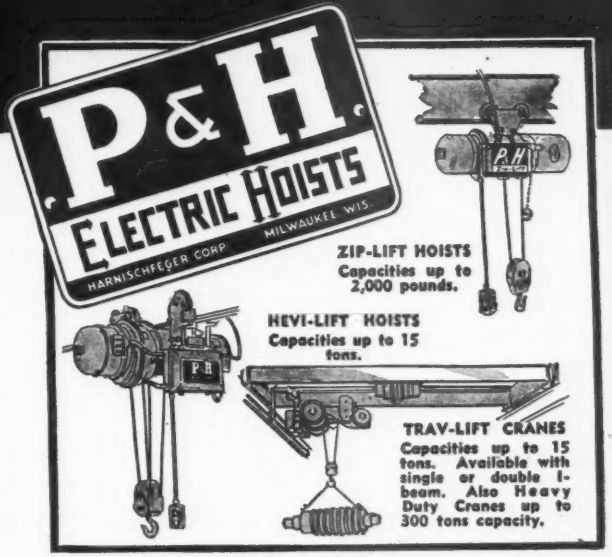
INDUSTRIAL CHEMICAL PROCESSES AND MATERIALS

For conserving vital manpower . . . for saving energy . . . for speeding up the handling of materials . . . and for eliminating aisle congestion . . . P&H Zip-Lift Hoists provide the quick, easy answer.

These modern electric hoists can be installed anywhere — quickly. With simple, full magnetic push button you have safe control — lifting, moving and lowering is fast and effortless. Zip-Lifts pay for themselves on an average of twice a year.

See how P&H Hoists can give you greater production today — and how they will aid you in lower cost production tomorrow. Call in a P&H Hoist Engineer. There is no obligation. Or if you wish, send for a copy of Bulletin H20-1.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ELECTRIC HOISTS
HARNISCHFEGER CORP. MILWAUKEE WIS.
ZIP-LIFT HOISTS
Capacities up to 2,000 pounds.
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Capacities up to 15 tons.
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Capacities up to 15 tons. Available with single or double I-beam. Also Heavy Duty Cranes up to 300 tons capacity.

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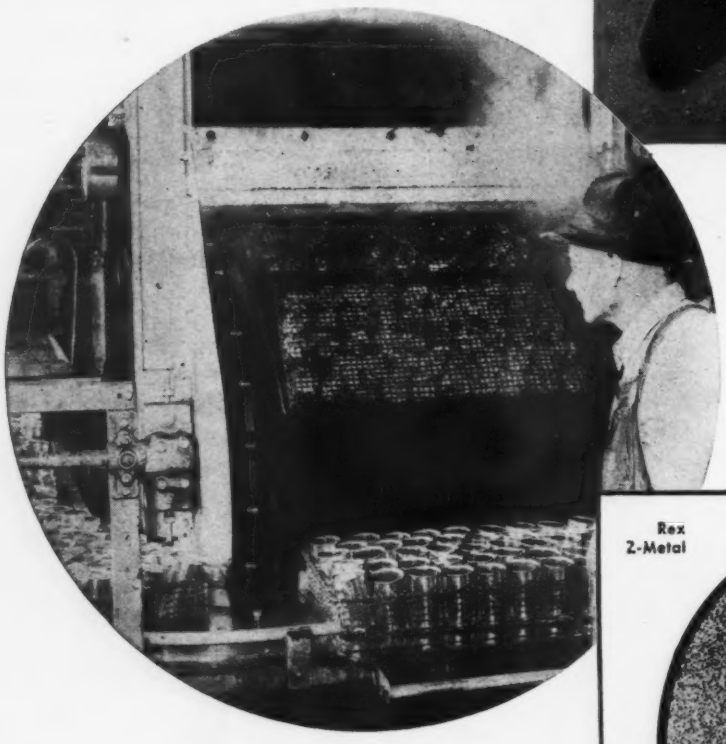
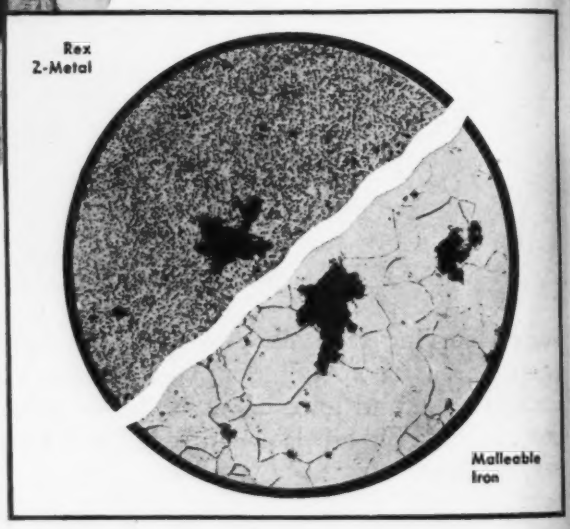
THAT CHAIN BELT CAN TAKE IT!

❶ WORKING IN A FISH CANNERY is no snap for a chain belt. Fish scales and slime, with their damaging corrosive action, can materially shorten the life of an ordinary chain. But not Rex Z-Metal. It's built to take it . . . to operate efficiently under dirty, moist or corrosive operating conditions.



❷ TAKE THIS COOKER for example. The chain belts driving the cooker and conveying the cans are made of Rex Z-Metal. For the live steam and corrosive conditions would rapidly corrode ordinary chain. For economical, trouble-free service in canneries, bottling, packing and food processing plants, Z-Metal can't be beaten.



❸ HERE'S WHY Z-METAL IS TOUGH. This photomicrograph (200 X magnification) clearly indicates the uniformity of Z-Metal's grain structure. The small spheroidal particles in the Z-Metal are iron carbide. They and their relation to each other impart the greater strength and hardness to Rex Z-Metal.

• • •

Rex Z-Metal chain belts are the answer to many drive or conveying problems involving heavy loads or corrosive conditions. The Rex Man can help you with your chain belt application problems. And for engineering data ask for the 768-page catalog No. 444. Chain Belt Company, 1616 West Bruce Street, Milwaukee 4, Wisconsin.

REX CHAIN BELTS

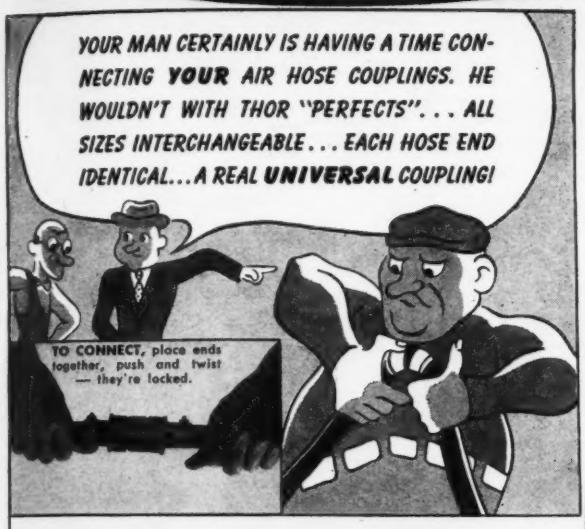
More than 2000 sizes and types for the positive transmission of power, timing of operations and conveying of materials

CHAIN BELT COMPANY OF MILWAUKEE

Rex Conveying and Engineering Products Division, Rex Chain Belt and Transmission Division, Milwaukee, Wis. • Baldwin-Duckworth Chain Belt Division, Springfield, Mass.; Worcester, Mass.

SAFER!

Thor "PERFECT" HOSE COUPLINGS


YOUR MAN CERTAINLY IS HAVING A TIME CONNECTING YOUR AIR HOSE COUPLINGS. HE WOULDN'T WITH THOR "PERFECTS"... ALL SIZES INTERCHANGEABLE... EACH HOSE END IDENTICAL... A REAL UNIVERSAL COUPLING!
TO CONNECT, place ends together, push and twist — they're locked.

EXCLUSIVE DESIGN ASSURES POSITIVE-LOCK CONNECTION

Every month more and more shops are turning to Thor "Perfect" Air hose Couplings as tests demonstrate their *greater safety.*

The ingenious, simple design of Thor Hose Couplings provides a positive, unbreakable connection . . . yet one that can be locked and unlocked in a jiffy.

Thor "Perfect" Hose Couplings can save *you* time and trouble. Ask for a demonstration in your own shop . . . soon.

Stocked and sold by leading mill, marine and foundry supply distributors everywhere.

TO DISCONNECT, simply pull back sleeves . . .
jaws open automatically.
HOLY SMOKES!
TAKES A YOUNG ARMY TO YANK YOUR COUPLINGS APART. WITH A THOR COUPLING, A QUICK, STRAIGHT PULL ON SLIDING SLEEVES AND THEY DISCONNECT IN A FLASH!

ALL THESE OUTSTANDING ADVANTAGES!

Positively locked connection that won't break or come apart.

Greater safety — couplings cannot separate even if one lock becomes caught on something.

Truly universal—no right or left, male or female hose ends. Interchangeable in all sizes to ¾".

Longer life—they're made of alloy steel, heat treated for extra durability; specially processed to prevent rusting.

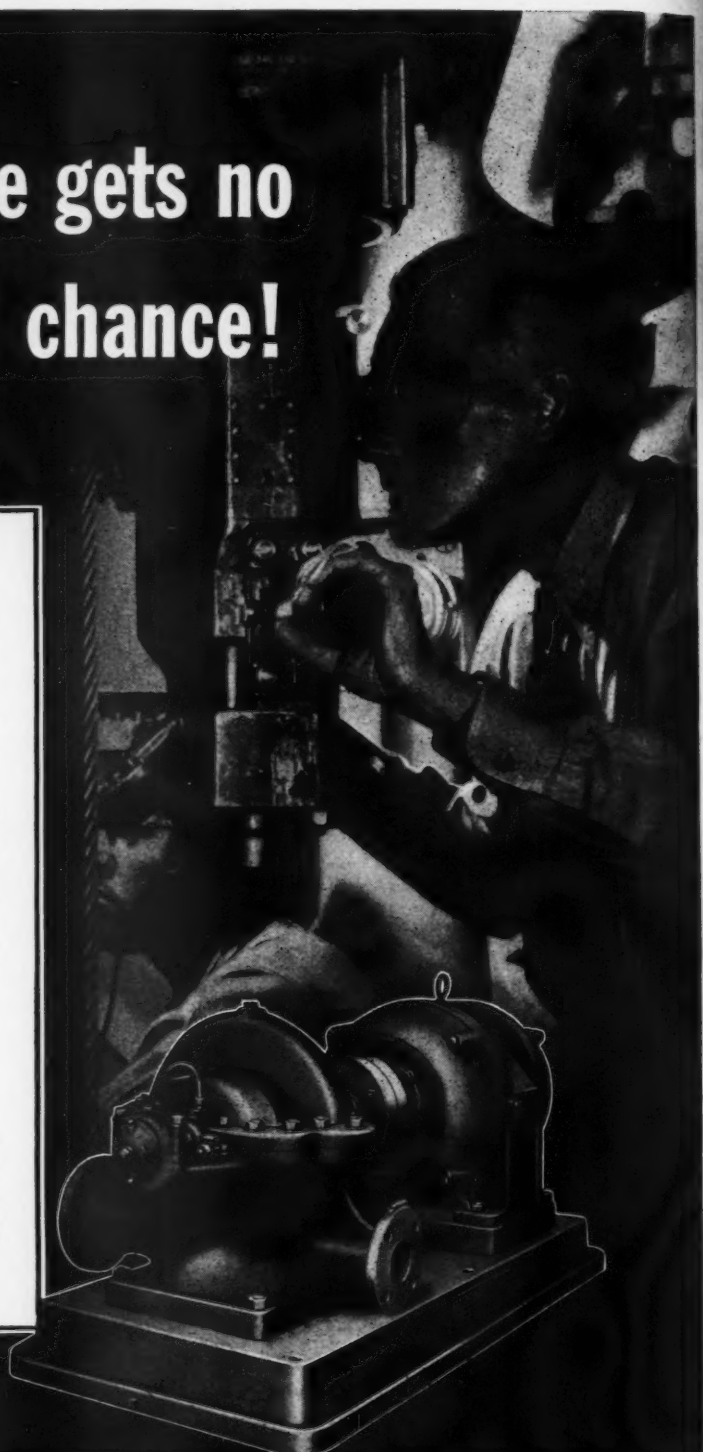
Quicker operation — *disconnect* by a simple pull on sleeves; *connect* by a straight push and slight twist.

Thor *Portable Pneumatic and Electric Tools*

INDEPENDENT PNEUMATIC TOOL COMPANY

600 W. JACKSON BOULEVARD, CHICAGO 6, ILL.
Branches in Principal Cities

...and failure gets no second chance!



"Surface!" With that command life itself hangs in the balance... depends upon pumps... reliable and efficient pumps that dare not fail *once!* It's a critical moment at any time... on any submarine, that demands the highest standards of perfection in pumping equipment.

That's why Fairbanks-Morse Pumps are used in United States submarine service. You can rely on Fairbanks-Morse Pumps... can know in advance that their mechanical superiority assures you dependable, economical operation now and for years to come.

For consultation without obligation, write Fairbanks, Morse & Co., 216 Fairbanks-Morse Building, Chicago 5, Illinois.

Fairbanks-Morse Centrifugal Pumps

A complete "family" of single-stage, split-case pumps for low, moderate, medium, and high heads, is described in Bulletin 5810D. Many other bulletins available on other types.

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STOKERS
FARM EQUIPMENT
RAILROAD EQUIPMENT

Pumps

Spotlight on the NEWS

WESTERN INDUSTRY
FOR APRIL, 1944

VOLUME IX NUMBER 4

War Workers Plan to Stay

Nearly 50,000 of the 81,881 employees in the three Kaiser shipyards in the Portland area plan to stay in the locality, and at least 11,000 of the newcomers expect to remain regardless of whether they have jobs in sight or not; and 16,000 more of the newcomers if there are jobs for them. Less than one-third have lived in the Portland area more than three years, and of the remaining 61,000 workers 46,000 came from other states than Oregon and Washington.

These are some of the facts developed by 450 interviewers who questioned nine out of ten of the 91,000 employees, in a survey directed by Chilton R. Bush, head of the journalism department at Stanford University.

Only 14 per cent of those interviewed had any postwar plans as far as a job is concerned. Thirty-six per cent of all employees said they would stay in the Portland area, job or no job, 24 per cent if they had jobs and another 18 per cent were not sure.

Surprisingly, only *four* said they planned to buy a business with their savings. Slightly over 30,000 or 37.7 per cent, expected to buy a new home or some land, and approximately the same percentage of those indicating a desire to buy real property preferred the Portland area.

Monsanto Invades Coast

Monsanto Chemical Company of St. Louis, one of the largest manufacturers of materials for the heavy chemical, plastics and pharmaceutical industries, have entered the West Coast industrial community through acquisition of one of their principal customers, I. F. Laucks, Inc. of Seattle.

Laucks are the world's largest manufacturers of plywood glues and a highly successful concern, and will remain intact as a Monsanto unit without change of personnel. I. F. Laucks is president, H. P. Banks, vice president, and Leo W. Eilertsen, secretary-treasurer. Charles Belknap is president of Monsanto and Edgar M. Queeny chairman of the board. Laucks have properties at Seattle, Los Angeles and Vancouver, B. C., and at Lockport, N. Y., Portsmouth, Va. and Stanbridge, Que. Monsanto own or operate 19 domestic plants and several foreign.

Wood Pulp Wastes Utilized

Puget Sound Pulp & Timber Company has begun a $1,000,000 plant at Bellingham, Wash., for production of ethyl alcohol from waste sulphite liquor, under contract with the War Production Board. Lawson P. Turcotte, executive vice president, says it is hoped to have the plant in operation early next fall.

Go Ahead Signal at Geneva

War Production Board has lifted its stop orders on completion of the structural steel mill at the Geneva Works in Utah, enabling finishing up the job next summer. For a time the Government had under consideration shipping it to Russia, but there were plenty of idle facilities available in the East, so the equipment which was already on hand at Geneva ready for uncrating will remain in Utah. The mill will cost $17,250,000 and will follow the plate mill into operation.

Double Output at Phoenix

Goodyear Aircraft Corporation's Litchfield plant near Phoenix, Ariz., has undertaken a building expansion program that will permit it to double its output by summer and add approximately 2,500 workers.

The whole new program will double the present facilities for modification of B-24 Liberator bombers and treble the manufacture of airplane parts. It will provide for a second complete modification line.

Promote Magnesium Uses

WPB is urged by the Truman Committee of the U. S. Senate to cancel its order limiting the use of magnesium to war and essential civilian items, so as to lay a foundation for a new post war industry through development of additional uses for the metal and also to protect the government's $500,000,000 wartime investment in magnesium plants.

Further research should be undertaken at once, the committee urges, to develop magnesium for such uses as the making of photo-engraving plates, automotive parts, portable tools, vacuum cleaners, typewriters and business machines.

Largest domestic magnesium producer is Basic Magnesium, Inc., whose plant at Las Vegas, Nev., reached its 112,000,000 pounds yearly production capacity by July 1, 1943, although the $133,000,000 cost of the plant is almost double original estimates, according to the Truman Committee, due to "extravagancies and inefficiencies" in the early stages of construction.

Superphosphates in Idaho

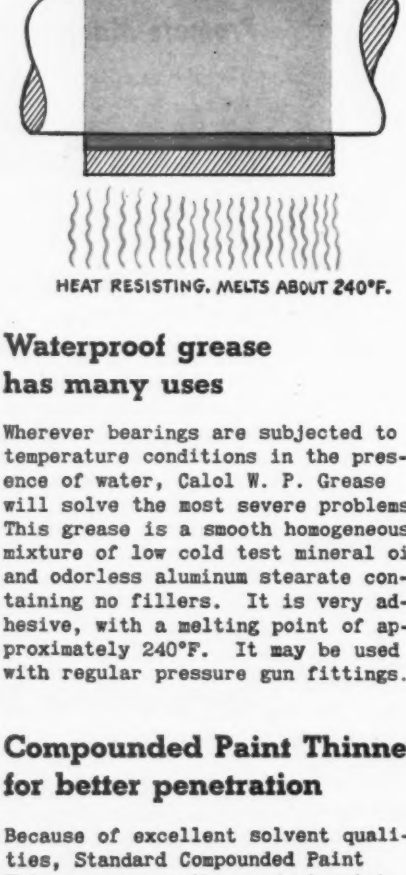
Work has begun on a $1,000,000 plant for making superphosphate fertilizer from phosphate rock deposits on the western flank of the Grand Teton Range in eastern Idaho, using the sulphuric acid treatment method, the acid coming from mines in Utah. J. R. Simplot, widely known for his potato dehydration ventures at Caldwell, heads the project, and his plant is in Pocatello. Superphosphate is particularly adapted to irrigated land.

Expect Naval Air Stations

An appropriation of $35,350,000 for naval air stations and other facilities on the Central West Coast to support fleet and sea frontier operations has been favorably reported out of committee to Congress, and final passage is expected shortly.

STANDARD ENGINEERS NOTEBOOK

VOL. 1-W NO. 2



Waterproof grease has many uses

Wherever bearings are subjected to temperature conditions in the presence of water, Calol W. P. Grease will solve the most severe problems. This grease is a smooth homogeneous mixture of low cold test mineral oil and odorless aluminum stearate containing no fillers. It is very adhesive, with a melting point of approximately 240°F. It may be used with regular pressure gun fittings.

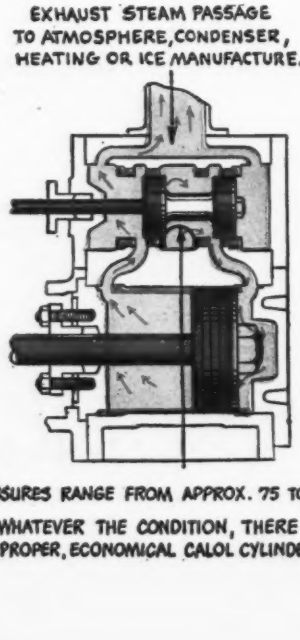
Compounded Paint Thinner for better penetration

Because of excellent solvent qualities, Standard Compounded Paint Thinner assures the correct paint consistency for application and firm adherence to all surfaces, thus providing a strong foundation for succeeding coats. It evaporates completely, leaving only the preserving oils and color of the paint. It is not to be used for thinning lacquer. Like turpentine, Standard Compounded Paint Thinner will not "burn" or impair the life of the paint.

Choosing the correct Steam Cylinder Oil

In choosing Steam Cylinder and Valve Oils, the following engine operating conditions should be considered:

1. Throttle steam pressure.
2. Throttle steam temperature.
3. Whether non-condensing or exhaust steam will be re-used for feed-water, refrigeration or heating. To correctly lubricate steam cylinders where temperatures range from 240°F to 800°F and pressures as high as 650 lbs., Standard of California makes 17 different grades of Calol Cylinder and Valve Oils. A handy reference guide to their use is contained in "Vital Protection for Industrial and Marine Equipment" — a free booklet available from your Standard Representative.


EXHAUST STEAM PASSAGE TO ATMOSPHERE, CONDENSER, HEATING OR ICE MANUFACTURE.
PRESSURES RANGE FROM APPROX. 75 TO 225 LBS.
WHATEVER THE CONDITION, THERE IS A PROPER, ECONOMICAL CALOL CYLINDER OIL

STANDARD OF CALIFORNIA

INTEGRATED WESTERN POST-WAR PLANNING IS STILL FAR OFF . . . .

Future of Overshadowing Big Industrial Enterprises Virtually Untouched. Bridging Demobilization Gap Locally Is Well Under Way

OVERALL, integrated, Western post-war planning is still far off.

Grass roots planning by cities, states, the Committee for Economic Development and commercial organizations to bridge the demobilization gap locally is making good progress.

But the overshadowing task of reaching a common understanding and purpose regarding the future of the big Western industrial enterprises has hardly been touched, despite the fact that they vitally affect localities hundreds or even thousands of miles away, as well as their immediate communities.

To date the only tangible evidences of overall planning are:

1. The Carson City conference of state committees on interstate cooperation, at which there was vigorous and enlightening debate on the prospects of the two new Western steel mills at Geneva, Utah, and Fontana, California.
2. Formation of the Northwest Light Metals Committee to champion the cause of the aluminum and magnesium plants in that area.

As for the proposed interstate cooperative meeting on light metals in the Northwest and the All-Western meeting of state officials, industry and labor, mentioned in the last issue of *Western Industry* as tentatively planned, the first has been put over until next February and nothing further has developed regarding the latter.

Within the states considerable is going on in the way of industrial planning. Some of it is of more than local importance, such as the garment industry program to make California an apparel and textile manufacturing center and the decision of the California State Chamber of Commerce to concentrate on development of the iron and steel, chemical and plastics industries instead of scattering its fire on a great multitude of projects.

The garment industry program was brought into public notice at the first meeting in Sacramento, March 22, of the citizens advisory committees of the California Reconstruction and Re-employment Commission.

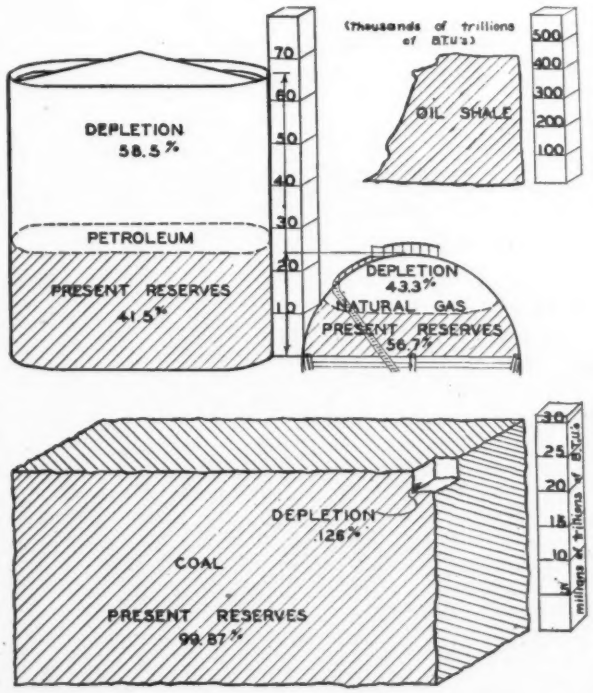
Fred Pruter, on behalf of the industry, reported that California apparel manufacturing has reached nearly $125,000,000 a year, but the industry could double and still only supply one-half the clothing sold in the West. He indicated that post-war growth might mean an employment of 30,000 to 40,000 people, and that the state was already on its way to becoming a style center.

Government agencies can only develop the facts, the advisory committees were told by Col. Alexander R. Heron, executive officer of this Commission. No project can come into being simply because some government agency considers it would be a good thing, he said. The only instrument that will bring capital out of its safe place of inactivity into its dangerous place of activity is enlightened self-interest, the opportunity of profit.

Col. Heron described the tourist industry as a basic one in California, due for even greater development after the war, reported that the benefit of an accumulated residential building demand would be felt for a generation and that construction of 90,000 to 100,000 residential units a year was predicted by some authorities.

He predicted that transportation demands on highways, railroads and airlines would be far beyond pre-war days and that agriculture may become more closely linked with industry through such projects as guayule rubber, mulberries for silk culture or a broad chemurgic program.

Governor Earl Warren's active interest in the work of his Commission is indicated by the fact that he presided over the general meeting of all the advisory committees, delivered an address stressing the need of bridging the demobilization gap in em-



Mineral fuel reserves of the 11 Western states and extent of their depletion. From Utah Dept. of Industrial Development.

	ORIGINAL RESERVES (Trillions of B.T.U.'s)				
Petroleum	66,316	21%	Shale	450,000	1.43%
Coal	30,920,538	92.28%	Natural Gas	24,386	.08%

ployment and of long-range development of the industries that the war already has brought to California.

The California State Chamber of Commerce rather stole the show in the industrial sub-committee meeting on that occasion. James S. Dean, state director of finance, is chairman of the sub-committee. He and two other members were present, A. T. Mercier, president of the Southern Pacific Company, and C. J. Haggerty, secretary of the California State Federation of Labor. As three members were absent, Henry J. Kaiser, Robert E. Gross and Louis B. Mayer (the first being represented by Norris Nash, public relations man for the Richmond shipyards and the second by S. W. Voorhes, staff assistant to the Lockheed president), only an informal session was held.

Their efforts to find the guideposts to an industrial research program on which to base their post-war planning floundered until H. F. Ormsby, research director of the State Chamber, reported that his organization had already under way studies of markets, distribution, raw materials, and other matter governing plant location. His presentation was so impressive that the sub-committee decided to depend on the Chamber's efforts along that line, rather than start independent investigation.

Industries having exceptional possibilities of expansion in California were enumerated by Mr. Ormsby as quick-frozen fruits and vegetables, women's clothing, other "needles trades" products, plywood and wood plastic products, petroleum chemicals, electro-chemical products, plastics base materials, stamped and pressed metal products, tinplate, pipe and tubular products, internal combustion engines, refrigerators and quick-freezing locker units, automobile bodies, parts and accessories, automobile trailers, electrical appliances, electronic equipment, aluminum rolling and extruding, copper and brass industry and synthetic rubber.

"Industrial gap" studies, showing large consumption of fabricated items in the Western market and relatively small production, are theoretical, according to Mr. Ormsby, and the practical possibilities can only be determined by market studies which will reveal whether the volume of potential sales has reached proportions that will sustain reasonably continuous plant operation, and studies of raw material, labor and other production and distribution cost factors to determine whether these are favorable enough to permit competing operation or to justify branch plant location by national concerns.

His statement was made at a time when the Los Angeles Chamber of Commerce is giving considerable publicity to its "industrial gap" reports on Western manufacturing opportunities.

Mr. Dean's committee was offered the services of an industrial engineer as liaison man with Smaller War Plants Corporation by Col. Frank M. Smith, regional director of SWPC. He reported that 87 per cent of the shops reporting to SWPC in his territory are operating at full capacity,—the reverse of the conditions in New England, New York, Chicago and Cleveland.

Protect Small Business

In reconversion, according to Col. Smith, the Office of Civilian Requirements will prevent the big fellows gobbling up all the raw materials, while Stewart Griswold, regional production service manager for WPB, stated that if a sound industrial program was available after the war, the normal flow of supply and demand would be resumed.

Sacramento is to be the test city for the Western region in a study of the problems of small business by the research division of the Committee for Economic Development.

This was reported at a Northern California C.E.D. meeting in San Francisco on March 24, where L. J. Brundage, chairman of the Sacramento committee, gave a timely reminder that the agricultural situation must be carefully taken into account by industry in the West in its post-war planning. His committee has worked out plans for translating the tonnage of crops into employment figures by computing the man days required to prepare and harvest each product.

The "grass roots" nature of the C.E.D. program was well brought out at this meeting. C.E.D. is intended to help local communities to find a yardstick by which to measure industrial employment probabilities in the post-war period, to provide them with competent research data from specialists who are cooperating with the national headquarters of C.E.D., to supply an organization plan which will save time locally in figuring out simple and orderly methods of procedure toward attacking their post-war problems.

Critics of C.E.D. would have been enlightened at hearing the progress reports from the northern California area, indicated in such developments as the Richmond labor unions cooperating in the work in that city and becoming members of the local chamber of commerce, various cities completing their industrial employment surveys, and so on.

By its very nature this organization is shut out of the overall Western post-war picture, because the dues of its members would no longer be deductible from taxes if they engaged in a legislative campaign of any kind, which would virtually be necessary to handle the problem of the major Western war enterprises.

(For comments from readers on post-war planning editorial in February issue, see Pg. 42)

• New 100-octane gasoline plant of Frontier Refining Company in Cheyenne, Wyoming, financed by Defense Plant Corp., costs about $6,472,000. Facilities at new refinery include units for catalytic cracking, alkylation, isomerization, crude toppings, gas concentration, thermal reforming. Plant has 117 towers, uses over 50 miles of steel pipe, has 12,000,000-gal. storage capacity. Because of strategic location, raw materials may be hauled in by tank truck. Left center: Contactor section of alkylation unit, part of bauxite towers at extreme left foreground, deisobutanizer column at left edge. Right: Alkylation, isomerization fractionating section, gas storage units

• Rust-proof plastic screenings have wide range of colors and endure humid tropical conditions.

PLASTICS—Western Prospects Surveyed

Prefabricated Home Building and Industrial Products of Various Kinds Promise Big Outlets; Aircraft Market Developing Slowly; Raw Materials Picture Mixed

PLASTICS possibilities in the West, not the glamor girl dreams of feature writers for newspapers and consumer magazines, but the cold hard facts needed by the people who expect to stay in the business without losing their shirts, were given a thorough going-over at the annual conference of the Pacific Coast Section, Society of the Plastics Industry, at Los Angeles February 21-22.

Certain raw materials can well be supplied by the West—styrene and other petroleum derivatives from the Southern California Synthetic Rubber Project at Torrance (synthetic rubber itself is really not rubber at all, but a plastic), by-products from the coking process at the Fontana and Geneva steel mills, wood wastes from the Pacific Northwest, chlorine from magnesium plants—just to mention a few.

There have been some notable developments already in chemical manufacturing in the West related to plastics, some well publicized, others very hush-hush. Some of the plastics people talk optimistically about Western raw materials, but others say we will have to depend on the East for some years yet.

Although the war has stimulated rapid growth of plastics manufacturing, the industry may not be an easy-to-get-into proposition afterward. James D. McDonald, chairman of the Pacific Coast section, pointed out that by far the largest part of the industry is too involved from the engineering standpoint to be very attractive, and much of it requires too large an investment in special machinery to be easy to get into.

The plastics container industry, gradually being assembled behind locked doors, will emerge to reveal highly specialized equipment and techniques, protected by a wall of patents and a material situation which is well in hand, he said.

Western Industry presents in the following pages a summary of some of the most important points developed at the convention.

Post-War Markets

E. F. Logee, Plastics Industries Technical Institute

THE volume of our plastics industry along the Pacific Coast has increased something like 500 per cent in the past two years, due largely to increased aircraft production and an increasing use of plastics in place of metals more commonly used in aircraft manufacture.

A great deal of new, modern, plastics equipment has been installed in our plants. Our engineering "know-how" and experience is equal to that in any other section of the country. Our tool and die shops are well equipped and well-manned. We mold, extrude, inject, and fabricate as wide a variety of complicated parts here along the Pacific as in any other part of the world.

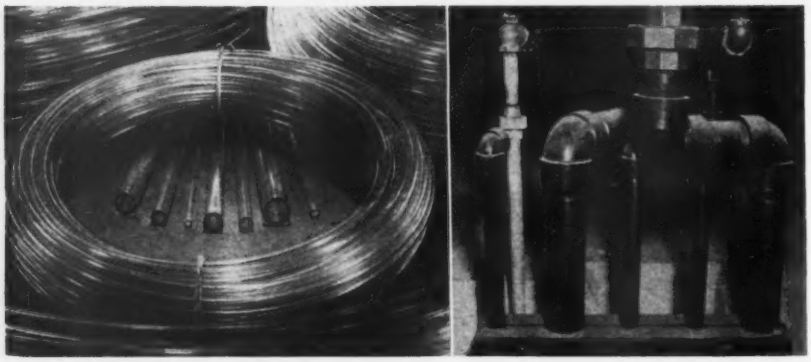
Wishful thinking that everything will be made of plastics after the war is silly. Any belief that aircraft, furniture, or other manufacturers who have used plastics because other materials were cut off, will go on using them universally is a mistake.

Some manufacturers who have found plastics exceptionally useful and practical in their work will stick to them. But others will have to be sold all over again, and this may be a tough selling job when we realize that light metals production has been stepped up all out of proportion to former years, and that wood, rubber, leather, glass and other old-timers will be in direct competition with plastics again.

I, for one, believe a lot of new homes will be built along the Pacific Coast and other Western states and a lot more plywood construction, both exterior and interior, will be used than ever before.

Prefabricated units may meet rather

PLASTICS—Western Opportunities . . . . .



• (Left) Transparent tubing, virtually unbreakable, can be readily bent, formed or curved. (Right) Close-up of pipe and fittings for connection to a current rectifier.

wide acceptance if they are designed and merchandised along the right lines. We all know that plastics resins have given plywood properties it never had before and we can see how plywood will fit into home construction and prefabricated units.

Plastics molders among us may say plywood offers no opportunity to them, but it does. If prefabricated kitchens and baths gain public favor, there are plenty of molded parts that will fit into this scheme. The measure of their success will depend upon how well molders lay their plans to produce household hardware, plumbing fixtures, bathroom and kitchen accessories, etc., along acceptable lines.

When we entered this war, automobiles, radio, and the electrical industry were prime customers for plastics and they will be again. There will be tremendous markets for these products and plastics will come in for their share.

Production for war has revealed many economies that will be even more interesting to aircraft manufacturers when they are building in open competition to each other, than during the cost-plus days. Refrigerators also offer considerable volume, both for cabinets, interior trim, and extruded pipe. These are not fantasies; they are facts.

One thing we should never forget is that plastics molding, either compression or injection, or extrusion, is one of the most rapid methods of manufacturing complete products that industry knows. These processes turn out completely finished items with color, gloss and permanent finish inherent to the materials and process.

There is no sanding, scraping, painting, baking, or other finishing required and the savings in man-power and skilled labor is very real. When threads are required, they can be molded integrally with the part. Inserts can be molded in place, and where superficial decoration is desired, it can be engineered into the product or quickly applied during the manufacturing process.

Chemical Sources

G. M. Hebbard, Plant Supt., Los Angeles Plant, Styrene Div., The Dow Chemical Company

THE reasons for the desire of West Coast Plastic fabricators to have a nearby source of plastic stocks, solvents, plasticizers, etc., are understood and appreciated by chemical manufacturers. There is no doubt of the energy and ingenuity of this group of plastics men, as they have created a potentially large market for plastics within a very short time.

Future markets for plastics manufactured on the coast include standard utility items for a fast growing population center, excellent possibilities in Oriental markets, and new outlets in plywood family planes, prefabricated housing, plumbing, furniture, and fruit and food packaging.

There would appear to be little doubt of the future in view of the above markets, and local conditions.

Consideration of materials required for plastics shows many important and basic chemicals not now produced on the coast. Only twelve concerns of size or with sufficient technical organization are engaged in chemicals manufacture on the coast. Included among these are only two in the organic field, Shell Chemical with solvents, allyls, alcohols and acetone, and the Great Western Division of Dow with chlorinated solvents.

There is a reasonable production of chlorine and caustic, ammonia and synthetic benzene, all basic components of major plastics, but expensive complicated plants are required for their conversion.

Present picture indicates first production might include vinyls, styrene, ethyl cellulose and acrylics. Little hope for thermosetting types for a long time.

Plant location problems in Los Angeles area are complicated by extremely poor waste disposal situation, lack of good water in many otherwise good locations, and a somewhat unfavorable public attitude towards industry without Hollywood appeal. Bay region locations generally a favorable in most respects; north coa section has ample water and power b faces distance from markets.

Most eastern plants are considered ove built now and will with conversions hav excess capacity for some period. In vie of the high initial investment cost pe pound of product per year, generally ex tremely complicated plants and require ments of highly trained technical staffs there is considerable question that industry will be willing to engage in any majo chemical expansion on the coast for some years after the war.

Some few of the present coast concerns will enter the plastics raw material picture in a moderate way to obtain markets and experience. The general conclusion is that we will have to depend upon our eastern sources of supply for the majority of our basic materials for an appreciable time to come.

New Materials

Charles Lichtenberg, Monsanto Chemical Co.

THERE is one prophecy we can safely make—the materials picture in the plastics industry will be quite different after the war when compared with the situation immediately before our active participation.

The most important influence bearing on plastic raw materials is the enormously increased capacity for the production of certain chemical raw materials used by plastic manufacturing companies. We have in this country now, for instance, capacity for the production of 400,000,000 pounds of monomeric styrene a year. Productive capacity for phenol, formaldehyde, acetylene, alcohol and a host of other vital chemicals have all been increased markedly during the war period. It is apparent that this development will have direct influence on the plastics material situation.

Second is the stepped-up research work on plastic materials that has been carried out during the war to meet urgent requirements of the armed forces. All companies have increased the amount of money and the number of personnel assigned to plastics research. The benefits of this work are already influencing the course of war production and will have a lasting effect in the post-war period. The third influence to be borne in mind is the increased competition of plastics with metals and other materials.

In the case of thermoplastic materials one of the most important effects will be the availability of polystyrene. Polystyrene today is the lowest cost injection molding material, and it is quite possible that it will be available at still lower cost in the post-war period. This will probably

PLASTICS—Situation Reviewed . . . . . .

result in the growth of polystyrene as the standard general purpose injection molding material for a very substantial proportion of the total injection molded applications.

The use of straight cellulose acetate will continue to grow, but probably at a slower rate than has been the experience heretofore. In these applications where cellulose acetate and polystyrene are equal from a physical property standpoint, it is difficult to see where cellulose acetate will continue to be preferred. However, we must remember that the overall plastics market is a growing one and that there will still be room for growth of cellulose acetate.

Cellulose acetate butyrate will certainly continue to grow in importance. There are many applications where the superior toughness of acetate butyrate over polystyrene will make it more desirable and will assure its continuing growth in the industry. Cellulose nitrate, having already reached its peak, will probably continue to be produced at a level rate, possibly with a long term decline.

Cost picture of vinyl molding materials is not yet clear. These materials certainly offer important advantages in many types applications. If they can be produced at a cost in the range of present thermoplastic materials, they will become greatly important to the post-war molder. It is clear they have the physical properties and their wide spread growth will probably depend on cost factor.

In the thermosetting family, the relative position of the different materials, will probably not be changed so radically. Phenolic molding materials will undoubtedly continue to hold their own as the heavy duty general purpose thermosetting plastic. It is unlikely that any important reduction in cost will take place in this class of materials because their price is already at a low level.

The war has brought, however, a much greater use of high impact phenolic materials and we can probably expect that trend to continue after the war. Molders are now much more familiar with high impact materials than they were prior to the war and will probably continue to be able to produce high impact parts on a profitable basis after the war.

Considerable attention has been focused on the melamine class of thermosetting materials and unquestionably the use of these materials will continue to grow in future years. They offer the advantages of color, good dimensional stability, high arc resistance and good resistance to weathering and outdoor conditions. These properties will undoubtedly assure the melamine group an important place in the post-war era.

As the result of research in the war period, we can be certain of having injection molding materials that will withstand temperatures above the boiling point of water. Various modifications of the styrene class of thermoplastics are being worked on and by the end of the war, there will undoubtedly be on the market, on a small scale, several different high temperature styrene injection molding materials.

Nylon has also been discussed in business magazines as a molding material. This material has much promise, particularly if its present high cost can be brought to the range of other thermoplastic molding materials.

Machinery Needed

George Scribner, SPI president, and president Boonton Molding Co.

OUR machinery and methods are still crude. We are still using hand-me-down methods from another era and another trade. Injection machinery is moving ahead constantly in design, but they are moving to larger and larger machines. The problems multiply and I am not sure that they can merely increase the size of the machine to get bigger pieces. Thermoplastic material doesn't weld nicely in the mold and five or six nozzles squirting in at different spots is not the answer for a machine to make a piece five times the size to be handled in one nozzle.

Instead of a large machine, we need a smaller bench type model, one that will handle one-half ounce at a shot. There are still thousands of small pieces to be made, and we have no machine to handle them.

Material is wasted cleaning cylinders all out of proportion to the total weight of the entire order. We need easily replaceable and cheap cylinders so we can have one for each material or each color on a rack alongside each machine.

Electronic heating must be tied into injection. We heat the thermo-plastic material over its chemically stable point to drive it into a mold. Time is very important under those conditions. Any appreciable delay in the machine operation, and we have burned material. Electronics should reduce this temperature gradient and the time element, too.

The compression machines we are using are merely a means to an end. They are distinctly not molding machines. We need something entirely different from the huge cast steel monstrosities now standard.

We should be able to assemble rams, rods, platens at will to fit a given mold, and knock it down into its integral parts when we get through. The assembly should be so that we could combine various sized top and bottom rams with an immovable center platen, one ram to flow the material, one to open and close the mold.

Side rams should be available so when needed to operate side pins or plates they can be attached to the rods or stationary plates. Pull back rams should be built into all cylinders out of the way, so they don't complicate the operation of the mold.

Aircraft Uses

W. I. Beach, North American Aviation, Inc.

PLASTICS are now beginning to take a modest but somewhat substantial part in the production of airplanes, and several types have a capacity to perform certain jobs better than other materials.

One of the most trying jobs in airframe construction is weight control. Ordinary, non-structural members, of which there are a great many in the airplane, support very little if any loads. They are primarily

• (Right) Plastic glass bomber nose being sprayed with mask for protection during assembly. (Left) Transparent, wire-laminated window pane that will withstand explosion of 150-pound bomb eight feet away. Is easily fitted to an ordinary wooden sash.

provided to protect vital parts and sections of the airplane. Among these are fellets, fairings, cable guards, radio and battery shelves, deflector plates, liners and others. Therefore, if these parts could be made infinitely light, the airplane would be served better.

Heretofore, non-structural items were fabricated from the thin gauge aluminum sheet material. Since minimum gauge sizes of .020-.025 and .032 are generally selected for a favorable stiffness factor, the parts are considerably overstrength for their functional uses. Hence, it is here in this field that plastic material is now assuming a weight saving role.

Another troublesome problem to an aircraft engineer is the low abrasion resistance of some of the light alloy materials. Occasionally, a part is designed to withstand a constant rubbing action or sharp impact blows from ejection ammunition cases and links.

It has been found that due to better abrasion properties of the thermosetting plastics, these materials outwear and serve better than aluminum and some steels. Hence it has been practical, within strength limitations of the material to replace metal in a number of similar applications.

The corrosion resisting properties of plastics sometimes may be utilized in certain applications, particularly in the interior of the airplane, thereby saving the weight and cost of the protective finishes.

The resiliency of the thermosetting laminates have been particularly useful when employed in ammunition boxes, ejection cases and chutes and deflector plates. Whereas, metal tends to deform if deflected beyond its elastic limit, the laminates spring back to shape unless the modulus of rupture has been exceeded.

All these are very useful properties and tend to contribute some small part to the efficiency of the airplane. It is in this field that plastics have made an unspectacular start, but it promises to be a permanent one.

Supply Outlook

Clinton Rector, Chief, Plastics Section, Chemicals Branch, War Production Board

WHEN our aircraft specialists found that high altitude flying was limited by the arc resistance of the ignition insulation then available, the plastics industry responded by perfecting a group of materials built with melamine, which are far superior to older insulating materials.

As a result of the demand for superior insulation under extremely high frequencies, several new insulating materials have been developed and have been used extensively particularly for the insulating or electrical cable.

When a material having extraordinary mechanical strength and free from "flowering" when penetrated by a bullet was demanded, a laminate built of woven glass was developed and this type of material has been adopted for a wide variety of important war uses.

Recognizing the potentialities of these woven glass laminates, the plastics industry has developed binders which could be used as a reinforcing material, resulting in the perfection of a number of complex polymers unique in one regard, in that they may be molded under extremely low pressure or without pressure to form an endless variety of complex shapes. The resulting laminates possess extraordinary mechanical strength and remarkable durability.

The plastics industry is producing for war approximately 440,000,000 pounds per year, and the vast majority of this material will become available for civilian uses the minute the last gun is fired. Nor is this the only new civilian availability which will be accessible to industry after the war. A huge chemicals industry has been built up for non-plastic military purposes, such as the making of explosives, and this capacity will, in many instances, be suitable and available for the production of additional plastics.

In order to provide some of the large components required, high strength phenolic base laminates which may be molded under pressure as low as 150 pounds per square inch have been perfected and several unique processes have been developed for plywood molding. These developments have made possible the construction of such component parts as a tubular radio mast, which is 75 feet in length; gun turret parts, pilot seats, and a variety of other highly essential units.

A number of monofilaments and elastomers, having new and unique characteristics, have been perfected as a result of military requirements for such items for woven screen for use in the South Pacific and flexible film for the protective packaging of military supplies.

The electomers, as a broad group, have been used very extensively for the replacement of rubber in such articles as flexible fabrics, grommets, tubing, and as insulation on electrical wire and cable.

Jet molding and high-frequency heating should be cited prominently among the improvements in processing technique which have been brought about during the war. The industry has also developed new and improved methods for the blowing and extrusion of thermoplastic materials

Building Field

Paul R. Williams, A.I.A. Architect and Consultant

THE fusion of polystyrenes with enamel and lacquers has a marvelous field. I can visualize bathrooms, kitchen walls and ceilings with a plastic finish which can be applied with a spray gun, and just imagine how much more sanitary it would be to take a delicate wallpaper and be able to coat it over with a thin layer of liquid glass which could be washed at will rather than the old-fashioned way of applying a coat of starch to be washed down each spring.

And then if you *really* want to make a contribution to the building industry, why not develop a thick emulsion-like combination which we can apply to the exterior of old brick or concrete buildings, giving them a smooth, glazed surface somewhat similar to terra cotta. Even though you had to sand blast the exterior first to get an even surface, think what an important part this would play in the modernizing of our older cities.

Much of this, however, *is* wishful thinking—as plastics must be made to compete with wood and plaster from a price standpoint before they can even be seriously considered.

There is definitely a place in the construction industry for plastics, but a greater field for the combined use of plastics and

• Although aircraft plants have had considerable grief with plastics, their use is slowly growing. Parts for B-25 Mitchell bombers and P-51 Mustang fighters appear below, also forming die. North American also uses formed sheets as thick as ¼-inch.

PLASTICS—Home and Household . . . . .

Plastics notables at Los Angeles convention. Back row, from left: Ralph Hemphill, executive board chairman, Plastics Industries Technical Institute; Ronald Kinnear, chairman, national board of SPI, president of Niagara Insul-Bake Specialty Co.; L. M. Rossi, Bakelite Corporation; J. D. McDonald, chairman, Pacific Coast Section, SPI, president McDonald Manufacturing Co.; Donald Dew, Diemolding Corporation, past president SPI; Horton Spitzer, general sales manager, Plaskon Division, Libbey-Owens-Ford Company. Front row: Francis A. Gudger, president Plastics Industries Technical Institute, former general manager plastics division, duPont Corporation; William T. Cruse, executive vice president, SPI; George Scribner, SPI president; Clinton P. Rector, chief, plastics division, WPB.

other materials. The building industry is anxiously awaiting a new lightweight building block, and the pre-fabricated house enthusiast would more than welcome a rigid lightweight wall slab that could be used for prefabrication.

The formula for a good building material is: first of all it must be strong, weatherproof, and of such material that can be *rigidly* held together. But today, in order to meet our new trends in construction, an outstanding material should be a sound and heat insulator, and preferably have a permanent finished surface which can be used as an exterior or interior finish without the need for painting.

This, I believe, is possible by combining a core having the insulating properties with a lightweight metal reinforcing, and possibly facing this on each side with a plastic sheet having an interesting texture.

I believe office buildings in the future will be built as loft buildings wherein dividing partitions will be placed where required by the tenant, as the trend today is to inject individuality into the planning of one's office. This means that we would want a soundproof plastic partition block which could be laid up dry, wherein an entire wall could be completed between working hours.

If it were of an interlocking type it would alleviate the mess of a wet plastered wall and certainly make a more permanent wall than the usual temporary wood partition. This block would also provide a worthy function if some were cast in a clear plastic so that the top three or four rows of the partition would admit borrowed light from the next room. These clear blocks could also provide a concealed source for fluorescent lighting.

Many trick and spectacular lighting effects have been designed and made possible by the peculiar light carrying qualities of the clear and sandblasted plastics, but the larger field of commercial lighting has scarcely been scratched. The electric lighting industry is now passing through a transition period which is somewhat of a fight for supremacy between incandescent and fluorescent principles. I think the ultimate solution will be a specially designed semi-direct plastic fixture wherein one is conscious of the light effect, but not of the source of light. Economic experts claim that after the war nearly two million stores will modernize with fluorescent lighting. In such event, it would pay plastic engineers to give considerable thought before casting this field aside.

Probably the most hoped for contribution which we expect from the plastic industry is a prefabricated plastic bath in which the tub, shower, toilet and lavatory are designed as one unit, and instead of weighing 600 pounds will weigh less than 100 pounds. It now takes 10 plumbing connections to set up four separate fixtures—whereas this combination could mean one water and one outlet connection.

When I say one water connection, I have in mind a new water heater about the size of a thermos bottle which the industry is developing, using the electron as the heat element, all of which could be made part of the unit.

Probably your first thought is that it is not practical to build dies large enough to stamp out units of this size. On the other hand, large lucite bomber compartments about the size of a bathtub are now being processed, and I can visualize a very interesting bath using a combination of light metals and plastics with possibly a curved pair of sliding shower doors made of a clear plastic to enclose the tub.

The kitchen offers the second best opportunity for mass production, and here again there is the possible combination of sink-stove-refrigerator and water heater which together with laminated plywood and plastic sheets for cabinet doors should certainly dazzle the housewife. Some consideration should be given at this point to the possibility of casting the hinges and various pieces of hardware as a part of the plastic sheet.

After this is solved, why not develop a thermal type of flooring which can be delivered to the job in a powder or molten form, and when heated could be spread over the rough floor and form a plastic linoleum type floor when it hardens? It would have no seams and you could have color to suit by adding a dry powder. Probably the most important field in flooring would be for industrial or commercial buildings, where there is need for a tough service that is still easy to walk on.

I can see various architectural treatments for air terminals, exhibit halls, sun porches and green houses, where the entire roof and sidewalls would be covered with plastic screen as a weather protection and still admit the sun rays. This could be processed in soft shades of coral, green, or any of the pastel shades, and in lieu of the usual 16-mesh screen, interesting shapes of metal reinforcing could be used.

Oakland Q. M. Scores In Materials Handling

TWO very simple improvements recently developed at the California Quartermaster Depot at Oakland, California, have made a vast difference in materials handling efficiency.

These are the "Boone Four-Way Pallet" and the "Boone Car Plate Lifter," originated and developed by the commanding officer, Brigadier General Milton O. Boone. The first makes it possible to pick up a tier of goods with a fork truck from any angle in the warehouse, while the other, so simple it is a wonder that it has not been thought of before, does away with lifting car plates by hand and delegates the job to the fork truck.

General Boone's pallet retains all the advantages of the standard pallet and removes all its inconveniences. Having openings on all four sides, it not only can be approached square on from any direction but also permits picking up the load from the corners also, if need be.

The wooden cross members are securely bolted to spacer blocks, making the pallet stronger and more rigid than the two-way type. Additional strength is provided by having the cross members on one side set at right angles to those on the other.

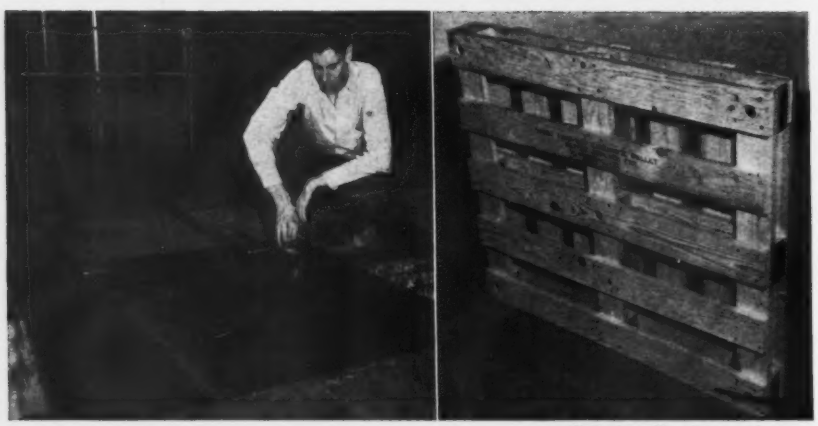
Traffic on the floor is considerably reduced because the number of necessary movements and approaches are lessened. Time is also thus saved. Furthermore, two to four fork trucks may be used on the same stack from four different directions.

Fire aisles may quickly be converted to traffic aisles if the necessity arises, and toppling or crumbling stacks are quickly remedied by fork-lift trucks approaching the stacks from the shortest distance or from any direction.

On account of the lumber shortage, two-way pallets are being used until they wear out, but are then replaced with the Boone pallet. From the Oakland warehouses their use is spreading throughout the quartermaster warehouses all over the country.

Adoption of the car-plate lifter makes it possible for one girl and a lift truck to replace the labor of three or four men required to handle the big steel plate which weighs up to 300 pounds. In far less time the plates can be carried any distances and placed easily in any position with absolutely no physical danger.

Steel loops with a key handle are inserted in appropriately shaped holes burned into the plate and turned 90 degrees either way to lock into place. The loops are used in pairs and make perfect apertures for the forks of the truck to be run through. The forks are then raised enough to permit ample floor clearance, and the truck boom is racked back so that the plate slides on the forks.



—U. S. Army Signal Corps Photos.

• (Top) Speedier handling made possible by use of the four-way pallet, since loads no longer have to be picked up from one direction. Aisle traffic is also reduced to minimum. (Lower right) Close-up of the pallet, showing bolting and right-angling. (Lower left) Fork truck all ready to pick up car plate when keys have been locked into place.

Tool Limit Raised

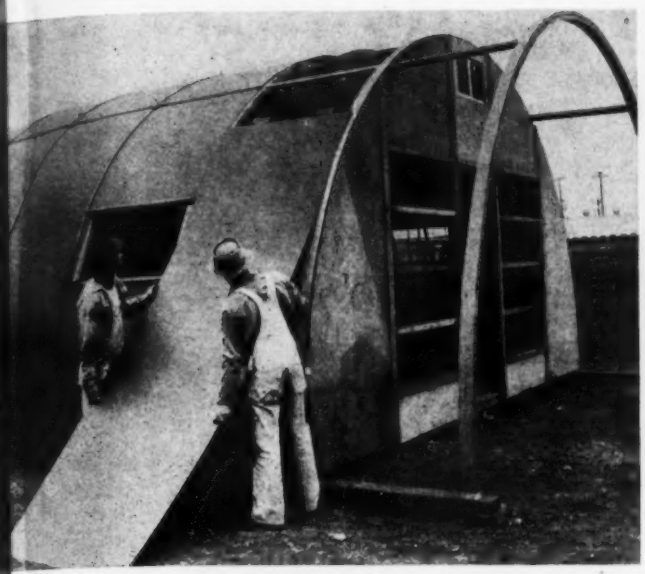
Because Western dealers in light power-driven tools are a greater distance from sources of supply, inventory provisions of the order governing these tools has been amended by the WPB to relieve these dealers of possible hardship.

The action was taken through amendment to Limitation Order L-237. It previously provided that no supplier could accept delivery of any light power-driven tool which would increase his inventory of that size and type of tool beyond five. Now the inventory limit is raised to eight tools of each size and type for dealers in 17 Western states.

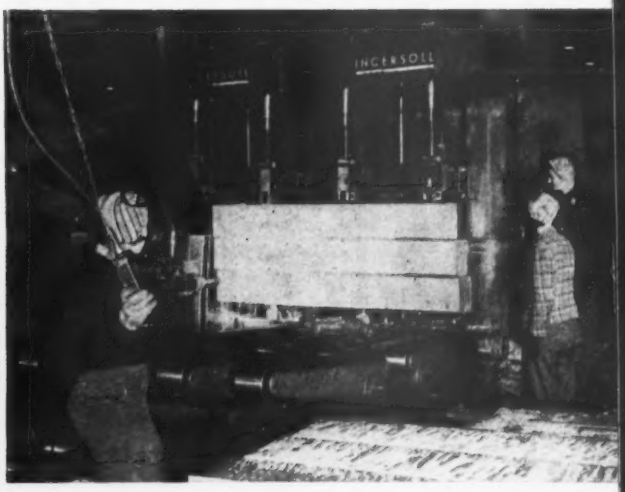
Eight Hour Violation

For employing two women as salesgirls at night after they had already worked eight hours during the same day in a local aircraft factory, a San Diego night club concessionaire was fined $250 by a San Diego court recently. All but $25 of the fine was suspended on condition that the defendant comply with the labor laws in the future. Under the California law, it is illegal for an employer to employ a woman during any day for a period which, with time worked for a previous employer, exceeds eight hours in that day.

WESTERN INDUSTRY IN PICTURES

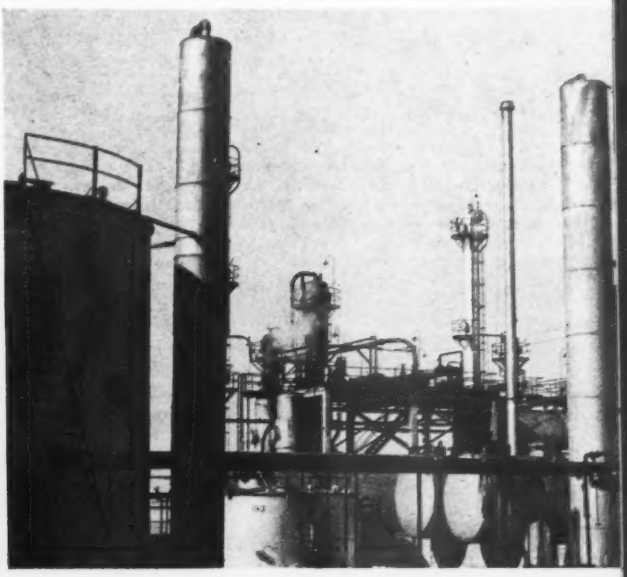


• "Westward" War Huts built jointly by Peerless Built-In Fixture Co., Berkeley, and Paramont Built-In Fixture Co., Oakland, Calif., were developed for housing military personnel and for service building use. There are two basic types, a "standard" hut used in arctic and temperate climates, and a "tropical" hut for warmer climates. Either type is shipped complete in five packages, readily erected by construction battalions, and can be disassembled and moved to other localities when necessary. Men are shown placing roof over end. Battens are nailed over each joint. Extra space is for porch.



• Large scalping machines at Trentwood Works, Aluminum Co. America, near Spokane, Wash., which machines the surfaces of ing preparatory to fabricating. Three forging ingots are shown go through scalper. This work is being done almost exclusively by wom

• Section of Utah Oil Refining Company plant in Salt Lake City.



• All-plywood lifeboats being made in Gunderson Brothers Engineering Corporation plant, Portland, Oregon. The boats have double planking with two thicknesses of ¼-inch plywood, precut from big panels, bonded to the framework with bath screws and glue. Fifteen hundred of these boats are now being constructed to go aboard freighters.

• Three 700-foot hangars recently completed at Tucson, Arizona, Division of Consolidated Vultee Aircraft Corporation, to house B-24 Liberator Bomber modification lines. The Tucson plant, one of the largest modification centers in the world, spreads over 164 acres of concrete. In addition to the three hangars, there are 36 other buildings, including warehouses, control tower, etc. Entire plant cost $7,000,000 and it is estimated that 3,500 persons will be employed when plant is at capacity production.

Sub-Contractors Show Startling Ingenuity on 155 mm. Howitzer

SUB-CONTRACTORS as well as the primes frequently have to exercise undreamed of ingenuity and skill in producing material for Army Ordnance, and such is the case with four machine shops in Sacramento, California.

They supply parts for the 155 mm. howitzer turned out by Yuba Manufacturing Co. of Benicia, whose conversion from a gold dredge, tractor and heavy duty machinery plant to precision work requiring almost unbelievable close tolerances is considered an outstanding example in ordnance production.

These Sacramento industries—Hansen Machine Works, Capital Machining & Welding Works, Robert McNairn Machine Shop and Christy Gun Works—not only devised ingenious tools, jigs and fixtures for the new type of work encountered in the howitzer sub-contracts, but they and Yuba were sufficiently efficient to permit three downward revisions of the contract, so that the Government is today paying only one-third of the original proposed cost.

Here are some of the features in the Hansen shop:

1. On a 50-year-old lathe used for machining the howitzer, an improvised attachment designed and built in the shop made it possible to cut the threads at both ends by running the lathe backward.

2. An improvised fixture for beveling with a flat grinding wheel enables the operator to grind a convex surface without a form grinding wheel. It took two men 20 days to build the fixture, but form grinding wheels are not to be had at this time.

3. A fixture adapted to a conventional engine lathe permits turning, threading and facing the cylinder with one setting.

4. A profiler attachment, in which the indexed fixtures are all combined in one, an outstanding achievement in machine tool engineering, cut production time on one item from four hours to 11 minutes.

5. To a machine that saw service in World War I and was purchased from salvage, a fixture for grinding the crankshaft was adapted. This enabled the Hansen shop to cut the ceiling price of $54 on the crankshaft to $34 at once, and today it is down to approximately $14.

6. Another fixture enables a single lathe to take the place of three conventional machines and eliminates three machining operations.

R. S. Thomson, proprietor of the Hansen Machine Works, and six members of his organization spent eight months designing and building the jigs and fixtures. In 1939 he had five employees, today several times that number, but of all the men, only five had any mechanical background. The roster includes a former bellhop, professional accordion player, piano player in a night club, prize fighter, motorcycle racer, brewery truck driver and a baker.

The new employees learned fast, and the night club piano player developed into an excellent bench hand, although he was no good on the machines because he was afraid of his fingers, having a desire to go back to piano playing after the war. The labor turnover is low; only six men left in 14 months, two of them being drafted, and there have been only two accidents in a year, with a total time loss of four hours.

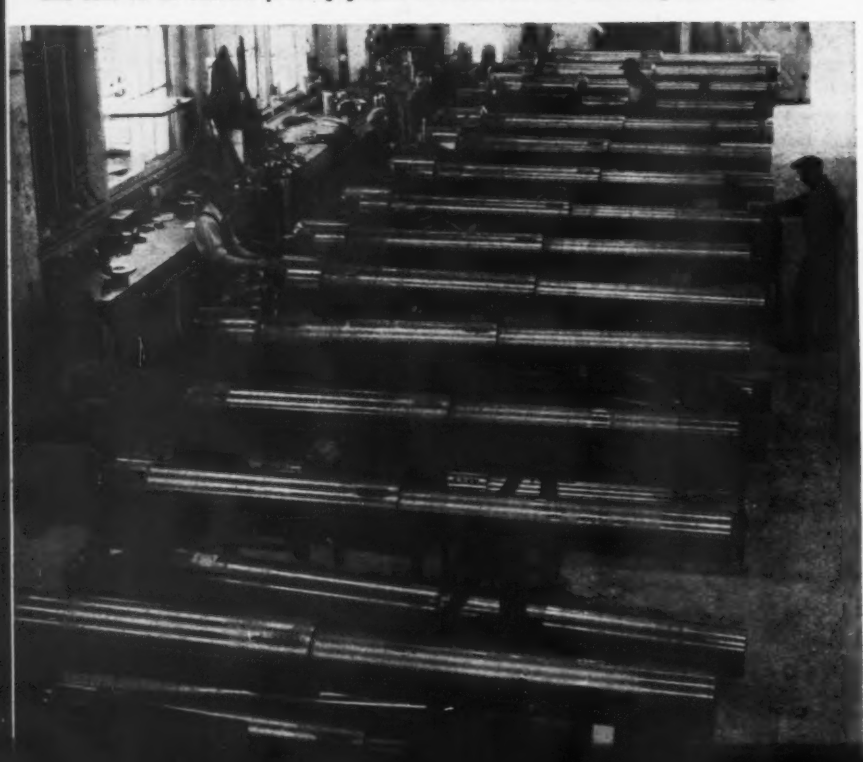
In the Capital Machine & Welding Works, operated by T. S. Kline and K. Rogers, partner owners, with E. L. Prouty as shop foreman, eight parts are machined, including sleeves, body pins, blocks, bodies, journals, spindles and washers. Thirty-seven operations are performed on the block. Capital also produces the firing pin, which presented many difficulties due to the intricacies of design involved.

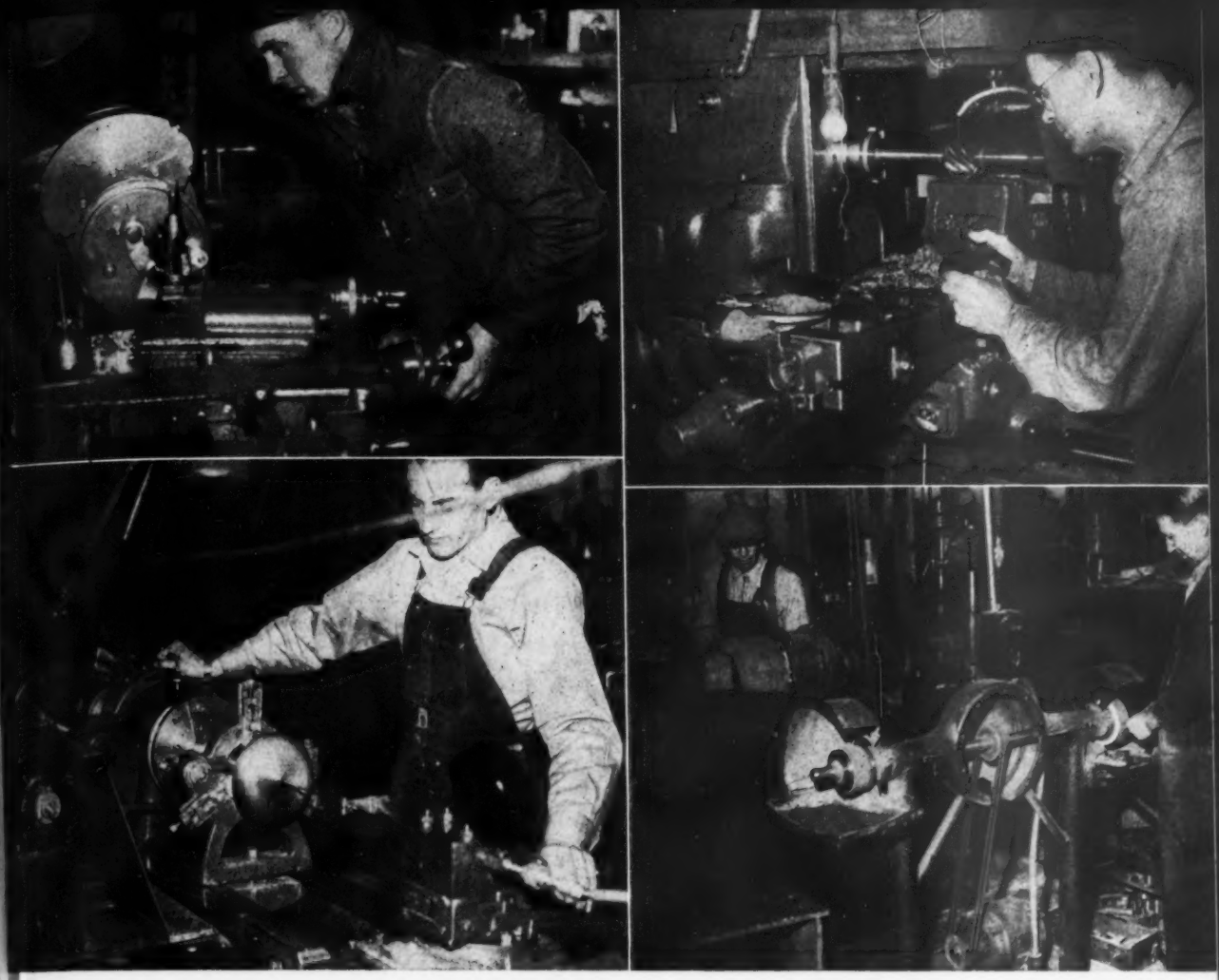
Capital was in production five months before any government gauges were received, so they made their own, and also made their own broaching machine for use until a modern broaching machine could be acquired five months later through government purchase. These are typical examples of their improvisation. They also built many of the jigs and fixtures used by Yuba.

Except for three pre-war employees, all the Capital men at the end of 1943 had come into the plant later, including several returned soldiers who had received medical discharges. Capital's peacetime work was general repair work on power shovels, gas engines, pumps, harvesting machinery and other heavy-duty equipment.

The Christy Gun Works, who formerly produced 160 gun parts, manufactured special attachments on order and repaired shot guns, rifles and pistols with a force of five men, were assigned the plungers, keys and sight-beveling plates for the howitzer. They had to increase their force many times the original number and operate three shifts, and to train miners, farmers, discharged soldiers, 4-F's and over-age men to be mechanics was a real task. These men are now mechanics, not machinists, although during the war period almost every man who operates a machine becomes a pseudo-machinist.

• Equipping 155 mm. howitzer tubes with breechblock and firing assemblies at Yuba Manufacturing Company, Benicia. Barrels are then covered, filled with cosmoline, wrapped with special paper for further protection against rust and corrosion, boxed and sent to an eastern proving ground for final test and mounting on carriages.





• SUBCONTRACTORS SHOW INGENUITY. (Top left): Gil Golladay, former motorcycle racer, turning crank shaft for howitzer. This improvised fixture, built in the Hansen shop, takes place of three machines and eliminates three operations. (Top right): this fixture, adapted to a Cincinnati boring mill, was designed and built in 16 hours at the Capital shop. Operated by John Sherman, former mining machinist. (Lower left): fixture at McNairn's for drilling hole through the 13½-inch spindle. On lower end of lathe is a motor furnishing pressure (500 lbs. per square inch) for oil which is pumped through the hollow drill to discharge chips from point of drill. Harold Hildreth, operator, was formerly a construction worker. (Lower right): snagging grinder for rough work, built by Christy out of an automobile rear axle, rear axle housing, brake drum and other scrap material. Operated by Al Barton, former baker, who enlisted but later received medical discharge from army. (All photographs by U. S. Army Signal Corps.)

One of the best examples of Christy ingenuity is the construction of a heat-treating unit (2200 degrees) built entirely of scrap metal. When it was impossible to procure pipe, either new or used, Christy substituted shotgun barrels which were welded into place and proved entirely satisfactory.

When the ordnance contract was first awarded him, he was to deliver the first keys in 30 days. A precision or surface grinder was necessary, but as the earliest possible delivery on a grinder would be 90 days, he made one by converting an old milling machine, making the magnetic plate and all fixtures in his own shop. Another Christy improvisation is a snag grinder for rough work built out of an old Ford rear axle and other material retrieved from scrap.

All the machines in the Christy shop are powered by individual motors and always will be, he says, since they are more efficient than the overhead drive commonly used in machine shops, cause less vibration and permit better work because the nerve-wracking noise of the overhead drive is minimized.

Robert McNairn Machine Works in prewar days did general repair work for local meat packers, canners, wholesale bakeries and dairy delivery concerns, for farm machine and highway equipment and work on laboratory equipment for the U. S. Engineers.

It took five months for him to design the necessary gauges, jigs and fixtures for the howitzer job. Included in the special tools is a fixture on a thread milling machine for milling all the threads. The shop performs one very unusual operation on the primer holder in milling a left hand thread. One McNairn lathe is more than 30 years old, but is in such excellent condition that with special fixtures it functions as an important ordnance production unit.

McNairn also had to train green men, grocery clerks, drug clerks, farm hands and what have you. Out of his force of 37 men, only six were experienced mechanics when they joined his organization.

Yuba Manufacturing Company, the prime contractor, has about seventeen subcontractors in all, most of them in California, who make parts for the howitzer.

These parts are brought to the Yuba plant at Benicia where they are combined with other pieces of the assembly made at Benicia, into the completed howitzers, and then proof-fired before shipping.

That Yuba and the sub-contractors have cooperated to the highest degree is shown by the fact that Yuba was awarded the Army-Navy production award on March 30, just one year from the day that Yuba delivered its first 155 mm. howitzer to the Army. Yuba is the only plant outside the U. S. Army Ordnance plants making the 155 mm. howitzers.

• Pouring magnesium castings. Man at left is fluxing metal to prevent oxidation.

Handling of Magnesium in the Sandcasting Operations . . . . .

By NED BRISKIN

MAGNESIUM is a silvery white metal, two-thirds the weight of aluminum and only one-quarter the weight of cast-iron. It is found widely distributed in the earth in minerals, saline deposits, seawater, and natural salt brines.

These salts and minerals are treated through an intricate chemical process before the magnesium emerges in the form of a metal. The characteristics of the soft pure metal are improved by making it up in the form of alloys by adding other elements to it.

Magnesium is usually sold in the raw state to foundries in the form of 20-pound ingots. It weighs only one and three-quarters times as heavy as water, machines very easily and in the form of alloys its properties can be improved by heat treatment. Consequently it is finding many new uses in industry.

At the present time one of the primary uses of magnesium is in aircraft castings. It has also been used to decrease weight and inertia in rapidly reciprocating machine parts. It finds uses in household appliances, portable hand tools and a large variety of applications where weight-saving is desirable, or in motors to get more horsepower per pound.

Because of its use in incendiary bombs, magnesium has gained a notorious reputation for being highly inflammable. This property has been grossly exaggerated. As a matter of fact, magnesium will not burn in the massive state. It must be melted before it will burn.

A magnesium casting, for the sake of demonstration, can be covered with gasoline and oil and set fire to. The gas and oil will burn away, leaving the magnesium casting entirely undamaged. In the form of fine chips or dust, however, magnesium is highly inflammable, just as steel wool is more inflammable than a steel casting.

There are three common alloys used in making sand castings: American Society for Testing Materials Nos. 4, 11 and 17. The minimum specifications for the strongest of these alloys is 34—pounds per square inch—tensile strength after it has been treated and hardened.

In melting magnesium, powdered fluxes have been developed which make it possible, with proper foundry technique, to turn out consistently clean castings free from flux inclusions.

Magnesium is melted in steel pots and then transferred to pouring crucibles where it is stirred and cleaned with a refining flux until it is clean and silvery in appearance. It is then superheated to 1600° F. to refine the grain size and improve physical properties.

The mold into which the molten metal is poured is made of sand which has powdered chemical mixed with it to prevent the molten magnesium from burning or reacting with the moisture used to temper the sand. These chemicals are called "inhibitors," and are usually a mixture of sulphur boric acid and occasionally also some fluoride salts.

Sand cores which form the internal surfaces of the castings also contain a small percentage of inhibitors, and must be made weak enough so that the metal, as it solidifies and shrinks around the core, will not crack. Both cores and sand used must be extremely permeable to gases so no back-pressure is created in the mold. Other-

wise, this pressure on the surface of the fluid metal may leave surface depressions or "blow holes" in the casting.

In flowing the metal into the mold, and in allowing for excess metal in the form of "risers" above the castings to compensate for shrinkage, the properties of lightness and low heat content of magnesium alloys must be kept in mind, and properly accounted for.

After the mold has been poured and enough time has been allowed for solidification, the casting is shaken out, risers are sawed off easily with a band saw, and the casting is trimmed down by rotary files. In this latter operation, since fine dusts are produced, proper dust collecting systems are needed to prevent the dust from accumulating and causing a potential fire hazard.

After cleaning, castings are heat-treated, which takes about 12 to 18 hours depending upon the alloy. This increases the strength and makes the casting more ductile. If more hardness is desired with greater dimensional stability, the castings are then given a hardening or "aging" heat treatment at a lower temperature for about 16 to 20 hours.

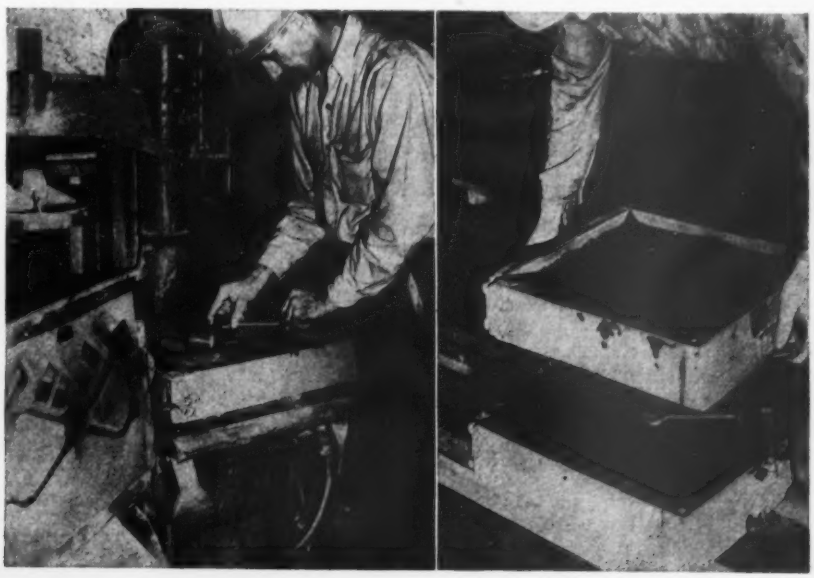
To increase resistance to corrosion and provide a good surface for paint adherence, the castings are dipped in a chromic acid solution for about a minute. This gives the castings a somewhat golden sheen, or some alloys just a mat gray surface, and protects it from mild atmospheric corrosion. Then a second surface treatment colors all areas, including those machined, a dark brown and prepares them for priming and painting.

EDITOR'S NOTE: The foregoing is a summary of Mr. Briskin's talk before the Northern California chapter, American Foundrymen's Association, on February 11, 1944. He is a graduate of Wayne University, Detroit, and from 1940 to 1943 was in charge of the magnesium foundry division of the engineering department of Ford Motor Company. Several of his articles on magnesium have been widely published. He is now foundry superintendent of Permanente Metals Corporation. It is an interesting fact that the Truman Committee of the United States Senate, in its recent report on magnesium, said that the cheapest magnesium, at 20½c a pound, could nearly compete on a commercial basis with aluminum at 14c.

Although Permanente Metals Corporation has been producing magnesium in the form of ingot since August, 1941, their entry into the sandcasting field is only a recent development. An output of 18,673 castings in January signaled the new foundry's start on a full production basis.

From the foundry at Permanente, California, come magnesium castings of all shapes and sizes, ranging from the small control pulleys used by blimps to the 440-pound outer glands for its own reduction furnaces.

A typical yield strength from Permanente magnesium is given as 20,500 pounds per square inch, ultimate tensile strength of 42,500 and elongation of 7½ per cent. One sample bar containing A.S.T.M. No. 4 alloy, which is the most commonly used, showed a yield strength of 20,500, ultimate tensile 47,500 and elongation of 11 per cent.



•PROCESSING STEPS IN SAND CASTING. (Upper pictures, from left) Green cores of sand, used in molding operation to form internal surfaces, are being prepared for baking in gas-heated ovens. Molder then sets core in mold, which is packed with sand under high pressure to form pattern of bomber steering wheel. Ready for pouring in molten magnesium, sand mold then is closed. (Lower strip) Following shakeout from mold, casting must go to cleaning room where gates and risers are cut off. Steering wheel is then given final polishing up before shipment to aircraft assembly line. Castings are dipped in acid solution to increase resistance to corrosion, changing its natural silver color to golden sheen. Use of magnesium for landing gear parts, like this fork for tail assembly, provides shock-resisting qualities as well as effecting considerable saving in weight of the completed product.

Air Fields and Ship Yards Loose Surplus

THE big ground swell of surpluses has been greatly increased on the Pacific Coast by a vast quantity of materials and supplies being released from Army air training fields in the area that are being closed, and by the setting up of Maritime Commission procedure for disposal of materials not required for immediate contracts.

Each Maritime Commission yard is to report to district headquarters of the Commission all surplus above the amount needed for the contract for which the material was purchased. The surplus will be segregated at each yard until sold or if space is not available, will be stored in Maritime Commission warehouses.

After needed material is allocated to the yards that can use it, the technical division of the Commission will check all unrequired material on hand, and determine whether plans and specifications for its ships can be altered so as to use it. First preference on the remainder will be given, in order, to shipbuilding contractors, other government agencies, war contractors, industries reconverting to civilian production, competitive bidders.

When the War Production Board requests that material be made available to firms engaging in war activities or converting to civilian production, a negotiated sale may be made without competitive bids. Otherwise sale will be made by the district purchasing offices through advertising for bids.

Statements regarding kind and quantity of surplus material will be issued from Washington. To get on the mailing list for information, interested parties should notify the district purchasing offices, stating the type of material in which they are interested, and will then receive offers to bid on that type. After five requests for competitive bids have been sent out without reply, names will be dropped from the mailing list.

These district officers are: T. J. Owen, 220 Bush Street, San Francisco (EXbrook 7606); K. F. Huntington, 112 West 7th Street, San Pedro, Calif.; A. S. Platou, 800 S. E. Hawthorne Blvd., Portland; J. A. Kaufman, Dexter Horton Bldg., Seattle.

No property will be sold above the maximum price set by the government. Where unit costs are not available because the material was purchased at a lump sum price, the cost will be determined by an appraisal board composed of two Maritime Commission representatives and one shipyard representative.

War Production Board is now listing all government-owned tools, and also is conducting a drive to locate lumber, because of the tremendous demand for it.

Supplementing the information in the March issue of WESTERN INDUSTRY regarding agencies having surpluses, additional details from some of the firms in the Aircraft Scheduling Unit have been received. They are as follows:

CONSOLIDATED VULTEE AIRCRAFT CORPORATION, Contract Department, Miscellaneous Sales Section, San Diego 12, California.

Individual to be contacted: Clyde Carswell, telephone Woodcrest 6611, Ext. 580.

Procedure: While it is contemplated that the list for general circulation to the public will be compiled, such a list is not available. Meanwhile the procedure will have to be direct inquiry as to what surplus materials are available for sale. All this should be handled through Clyde Carswell, whose telephone number is noted above.

Materials: The type of surplus material available varies. So far the miscellaneous sales section has been offering raw materials—iron, steel, stainless steel, aluminum and chromemoly steel; also Army and Navy standard Parker type fittings, fabrics, valves and aircraft electrical items.

CONSOLIDATED VULTEE AIRCRAFT CORPORATION, Vultee Field Division, 1206 South Maple St., Los Angeles 15, California, Surplus Material Sales Department.

Individuals to be contacted: Geo. A. Howard, PRospect 7731, Extension 25, and Mrs. Mary Dill, PRospect 7731, Extension 27.

Procedure: All material, regardless of type, must be purchased on either a priority, or WPB authorization. Assistance in obtaining this authorization will be given in all cases. This will include a large field of prospective buyers, as the sales in some instances will not be limited to companies engaged in war or essential work.

Materials: The materials for sale with large dollar value are:

Hardware—Bolts, nuts, screws, washers, rivets, wire, tools, files, fittings, paints, fabrics etc.

Raw stock—Sheet, tubing, bar, extrusion, in steel, aluminum, and copper alloys.

Miscellaneous—Shop maintenance items.

In fact, all items common to aircraft construction or shop maintenance are available.

Complete surplus books for general use have been prepared, also separate sections of same for those interested in special items only. These books, or separate sections, will be mailed upon request of those interested. All inquiries will receive immediate attention, and holds will be placed on material for a sufficient time to negotiate a transaction.

THE DOUGLAS AIRCRAFT COMPANY, Materiel Division, P. O. Box 9337, Station 5, Los Angeles 5, Calif. Street address, 661 S. Oxford St., Los Angeles.

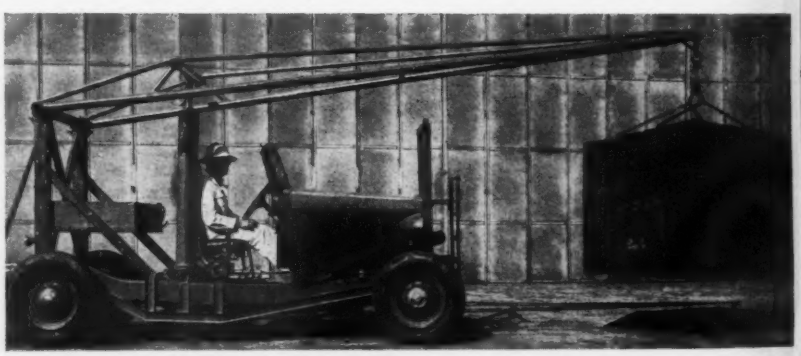
A special department has been set up in this company to sell surplus materials. This department, while new, is being rapidly expanded so as to service all inquiries promptly. Due to the purchasing power of the Douglas Aircraft Company, cost prices are in nearly every case as low or lower than the cost of any given commodity to a prospective purchaser. In certain cases where sales are made to wholesalers and jobbers, such sales will be made at the wholesaler's regular cost from his normal source of supply. Such sales are dependent upon quantity and type of surplus materials.

Douglas officials wish to point out that these surpluses have been accumulated as a result of change orders, cancellations and revisions of contracts and technical changes necessitating changing of materials.

Individual to be contacted: Surplus Sales, Attention Kenneth Roberts, Drexel 4161, Telephone Extension 206.

Procedure: Briefly, surplus materials may be sold by this company to any firm regularly engaged in the business of buying and selling such materials on a wholesale or jobbing basis prior to December 1, 1943. Such firms must resell these materials in accordance with War Production Board and other governmental agencies regulations. Purchases by firms in this category from surplus stocks may be made without priority or allotment.

(Continued on Page 38)



Ryan Handy Man Hoist Car—This formerly was a Ford V-8 of the early thirties.

At Ryan School of Aeronautics, faced with increasing shortage of materials, employees have built some unique equipment from odds and ends found at used car and salvage dealers. Hoist cars, tow cars and gas truck booms are some of the items which now aid at Ryan in field servicing and maintenance of airplanes.

For example, the Ryan Handy Man Hoist Car is made from a 1932, '33 or '34 Ford V-8 chassis. The chassis is stripped of all body parts with the exception of the hood and windshield. 3½ inch pipe, 1½ inch pipe, some light channel iron, a hydraulic hoist and other equipment are fitted and welded together and the result, at a total cost of $475 is this Handy Man. Technical Bulletin giving complete instructions is offered in "Yours For The Asking" on the last few pages of this magazine.

A COUPLE OF FAFNIRS THAT TIME FORGOT!

TIME HAS A HABIT of ticking unconcernedly along, leaving countless hundreds of Fafnir Ball Bearings to shift for themselves. And the Fafnirs are *just as unconcerned* about Time!

These Fafnirs weren't made to be coddled. Take, for instance, the application over at the left... although the shaft between the two Fafnir Pillow Blocks is short, there's a good, hefty two-way pull that ordinarily doesn't add up to long bearing life. But, the only attention they've received has been an occasional squirt of grease, during all the thousands of hours they've been on the job. They haven't been off that block since they went onto it... 5 years ago. Outside of lubrication, they haven't cost a dime in upkeep and repair.

In applications like this, Fafnirs not only give long, trouble-free service, they save power costs and insure smoothness of operation. You'll find other Fafnir Ball Bearings of this same type... Standard Single Pillow Blocks... in wide use in many war-converted industries with remarkable service and performance records to their credit. Fafnir's famous Balanced Design... larger balls, deeper races... makes the difference, gives them "what it takes" to stand up under all kinds of loads and service conditions. The Fafnir Bearing Company, New Britain, Conn. Branch Offices: Los Angeles... San Francisco... Seattle.

ARMY E NAVY

FAFNIR

BALL BEARINGS

SURPLUS *(Continued from page 36)*

The sale of surplus materials to other than firms in the above classification, that is, those companies which manufacture, fabricate or otherwise use or consume the materials required are in most cases subject to War Production Board regulations covering the matter of priorities and etc.

In general, a priority AA5 or higher is acceptable. However, since War Production Board rulings are changed from day to day, it is advisable for prospective buyers to contact their regional War Production Board office and obtain the latest information governing purchases of materials as they apply to the various types of commodities.

Materials: Surplus materials available for sale cover a wide range and include the following: Steel in all alloys, in many sizes and shapes; aluminum, also in all alloys and many sizes and shapes; copper and copper base alloys, also in a range of types, sizes and shapes. All of these metals are available in large quantities in many items and in all forms—that is, bar, sheet, tubing and strip, as well as substantial quantities and shapes of extrusions.

In addition to the foregoing, there are available quantities of aircraft hardware items, maintenance items, such as bolts, nuts, washers, paint and lacquer, solvents, thinners, motor oils, and greases and many other items normally required for factory maintenance and operating use.

Also very large quantities of production, perishable tools are available. This latter item includes a large assortment of cutting tools, such as milling cutters of all sizes and shapes, router bits, files, reamers, tapes and dies, dieheads, shapers, arbors, parts for certain machines and all manner of tool items for production. At this time no machines such as lathes, drill presses, etc., are available.

Miscellaneous raw stock is available in substantial quantity. This category includes electric wire, electrical equipment and fittings, such as plugs, resistors, rheostats, junction boxes, various types of synthetic materials, including plastics. At this time, however, the War Production Board will not release methyl methacrylate sheet which includes lucite and plexiglass.

Until such time as the War Production Board Chemical Division permits the sale of these materials, only those firms requiring such items to complete Army or Navy contracts are eligible to purchase from surplus.

NORTHROP AIRCRAFT, INC., Material Sales Department, 3341 East Slauson Ave. Los Angeles 11, California.

Individual to be contacted: H. D. Neal, foreman, LUcas 8131, Ext. 6.

Procedure: All surplus materials are ready for immediate delivery, subject to all governmental rules and regulations regarding priorities, etc.

LOCKHEED AIRCRAFT CORPORATION, Material Sales Department, 619 Antonia St., Los Angeles 31, California.

A special department has been set up to handle the combined surpluses of both Factories "A" and "B." All surplus materials have been accumulated as a result of change orders, cancellations and revisions of contracts, or other technical changes necessitating a material change. This material is all new and passed Army Air Forces inspection upon receipt. Catalogues will be furnished upon request.

Individual to be contacted: Five people to handle incoming inquiries. Telephone CApitol 5141.

Procedure: Wholesalers and distributors—Surplus materials may be sold as a general rule to any firm regularly engaged in the business of buying and selling like or allied materials as a wholesaler or distributor prior to December 1, 1943. Such firms are required to resell these materials in accordance with War Production Board regulations. Purchases of fabricated parts and components by firms in this category may be made from surplus stock without priority or allotments. In order to buy on an ex-quota basis without regard to inventory limitations, a cerification must be signed and returned to Los Angeles Redistribution Division of WPB. In the case of controlled materials—aluminum, copper and its alloys—existing governmental regulations must be complied with. Steel may be purchased under the conditions of M-21-B-1.

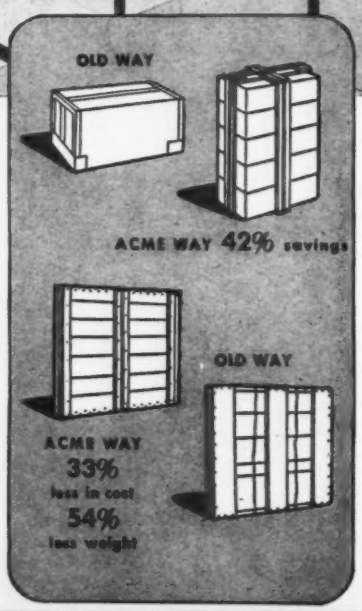
Industrial users: Industrial users are required to furnish a priority of AA-5 or higher. Aluminum, copper and steel must have a CMP allocation symbol.

Whenever doubt exists as to eligibility of persons desiring to purchase surplus material, reference should be made to PR-13 as amended. Any question regarding priorities or other selling restrictions should be made to the Material Sales Department since the services of a priorities man are available there.

Materials: Materials available for sale include the following: aluminum, copper and steel, in many alloys, and in most sizes and shapes. In addition, there are hardware items covering a wide variety of standard aircraft bolts, nuts, screws, cotter pins, etc. In the electrical section there are Breeze and Cannon standard parts as well as many instruments. Tools include drills, reamers, milling cutters, taps, ground tool bits, mandrels, spot welding tips, and arbors, together with many other items in this category. Miscellaneous materials include rubber, of which there is a large stock in many forms and shapes; paints, lacquers, oils, greases and cement. Alo included are many items of plant maintenance nature.

Requests for additional information or technical data regarding any of this material will be handled promptly by experienced analysts.

Doc. *Steelstrap* REDUCES THE "WASTE-LINE" ALL ALONG THE "SHIPPING-LINE"



Are your shipping packs physically fit?—or are they overweight—possibly wasteful in packing materials and excess freight?—Are they an easy prey to the hazards of everyday shipping?

Let Doc. Steelstrap, who symbolizes Acme's complete shipping service, give your packing practices a complete "check-up"—advise you as to the possibilities of "waste-line" reduction.

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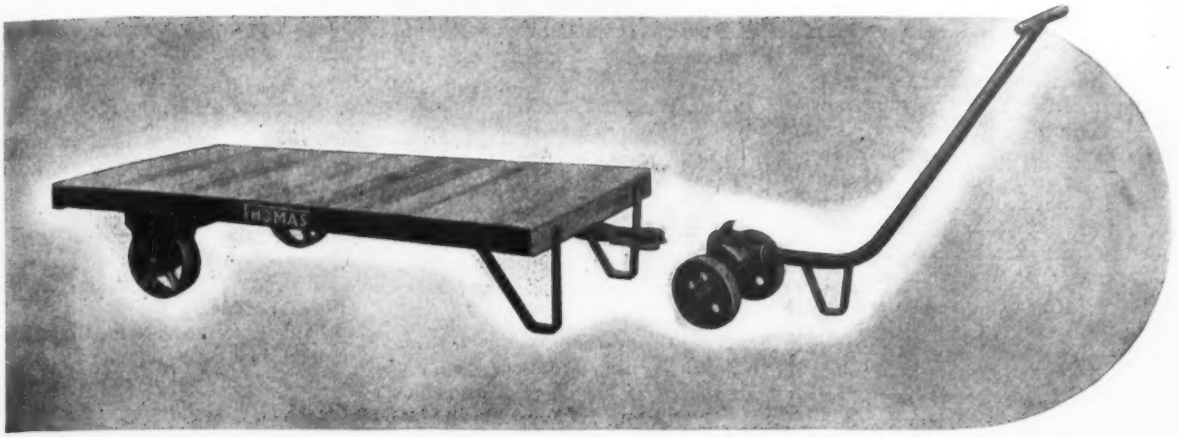
THOMAS TRUCK of Keokuk



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Put your plant on wheels—Save men, save time. Use the Jak-Tung way to avoid rehandling of loads. One Jak-Tung serves many trucks.

- Removable Jak-Tung to lift and move truck
- Jak-Tung platforms to store and carry loads
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- Avoids rehandling products in manufacture and storage
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- With or without "Job-Suited" Superstructures

The No. 125 steel frame Jak-Tung truck is available in 8 platform sizes, with semi-steel or rubber wheels. Capacities from 1760 lbs. to 3500 lbs. Welded steel angle frame. Hardwood deck. Shown with No. 102R Jak-Tung. Molded-on rubber tired, Hyatt bearing wheels. Simple, safe, easy lift and easy swivel. One serves many trucks.

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Hardwood or steel frames . . . balance or non-tilt types . . . 4 & 6 wheel . . . 11 platform sizes . . . over 20 capacities.

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Hardwood deck, with or without steel frames . . . standard models, heavy duty models and the new lift truck Jak-Tung.

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5th Wheel Wagon truck. Hardwood or steel frames. 10 platform sizes. 10 capacities. . . . Also Safety Wagon trucks in 15 platform sizes.

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Industrial foundry and warehouse trailers. 5 basic models. 7 capacities. Manual and automatic hitches.

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Hardwood and steel. Balance and non-tilt types. 4 and 6 wheels. 15 types.

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Hardwood and steel frames. For every material and freight handling job. 46 types.

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A major part of our business. New catalog illustrates 18 different casters in hundreds of sizes.

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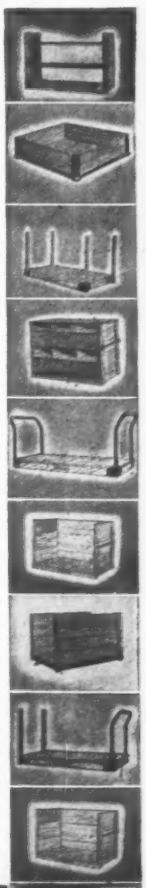
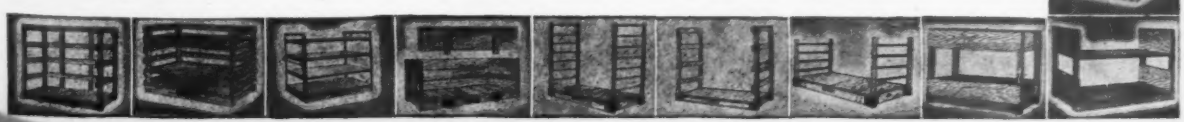
Metal and rubber and leather in a dozen types and in hundreds of sizes.





Prize-Winning Ideas To Speed Production

A NEWLY adopted subassembly technique for turbo-supercharger unit that saves approximately 24 man hours per four-engined bomber. The new operation coordinates subassembly of 175 turbo-supercharger parts, plus supporting members. Formerly the use of standard tools limited the extent to which this operation could be suited to mass production methods. Development of special precision tools, coupled with exacting routine, has resulted in the simplified, time-saving series of operations. Because assembly of the turbo-supercharger itself involves matching of parts made by nearly a dozen different vendors, the difficulty formerly encountered in achieving proper tolerances is obviated. This developed as a result of suggestion submitted to the company by Manuel Torres, foreman, Consolidated Vultee Aircraft Corp., San Diego Div.

Wire basket divided into a number of compartments in which lots of capscrews, bolts and nuts in dozens of sizes and types could be segregated, dipped in rust veto tank, taken out and drained, packed and shipped, thus solving problem of rust-proofing the enormous quantity of small parts quickly, keeping lots for separate shipments segregated and having them in convenient lots for shipment with outgoing machinery. Don MacNeish, Chief Carpenter, Western Gear Works, Seattle.

New filter units for plant air conditioning system. Replaced paper frames with metal cases and excelsior packing with spun glass. Resulted in increased efficiency and lowered operating costs. Leamon Lockhard, Dept. 41, plant maintenance, North American Aviation, Inc., Inglewood.

Hose and band cutter, designed to remove fittings from worn-out air hose, makes an estimated saving of 42 man hours per ship. William A. Dillon, Oregon Shipbuilding Corp., Portland.

Faced with the problem of repairing punch presses and not having a lathe large enough to swing the flywheels, started with an ordinary pneumatic drill and built a special boring machine which is accurate. Ira Johnson, Master Mechanic, Thermador Electrical Mfg. Co., Los Angeles.

Pipe hanger lead press to insert lead liners in pipe hangers, saves about 950 man hours and 500 pounds of lead each month. L. A. Zanon, Kaiser Company, Inc., Swan Island.

Pneumatic paint brush dryer, facilitates drying the brushes after they have been soaked and rinsed in paint solvent and results in an estimated saving of 500 man hours. Floyd R. Monroe, painter shopman, Kaiser Company, Inc., Vancouver.

Douglas Contributions

Simple method of splicing cables, using a modified sleeve pressed on, saves much wrapping employed in previous method and makes possible use of less experienced workers. D. A. Stanfield.

Silk screening of numbers and letters on instrument panels. Letters are neater, not easily scratched, eliminating touchup. Walt McGarvin.

Web bolt press tool to install bolts that are pressed in. Bolts were previously hammered in place, causing adjoining parts to be forced out of line. Time and material saved, may be operated by women. Richard Scott.

Micarta tab fabrication dies for use on the one shot machine and punch press. Strips of micarta are now furnished to size and are fed through die. Saves much time, is more accurate, simplifies procedure. W .D. Holder.—All of Douglas Aircraft Company, Inc., Santa Monica.

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Bigger Job With Less Manpower Available

INSTEAD of any diminution in war production activity on the West Coast in the months to come, authorities best posted on the situation feel that every bit of available manpower will be in great demand, and that contracts will continue to be placed as fast as they can be handled. In other words, it is a bigger job than ever before, requiring greater utilization of manpower.

With cargo ships in large numbers waiting to be repaired, and the prospect that heavy naval action in the Pacific will bring an additional flood of repair work at any time, plus the development of additional naval facilities to support the westward push toward Japan, it is not considered likely that any facilities will remain idle long.

Reports of contract terminations, with consequent unemployment, usually emanate only from small firms and by the time the story gets around the plant is busy again, according to WPB officials. As for the reports of labor drifting away from the West Coast, echoed by Washington officials who did not take the trouble to investigate, there is also steady in-migration and an unceasing demand for housing.

Withdrawal of thousands of young men from industry on the Coast in the next few weeks because of the tightening of the draft will increase the demand for labor and call for greater utilization of women and older men.

Aircraft War Production Council reports that a survey made in February showed that all the men under 22 in the seven major Coast plants number only a little over 1,300, or .45 of one per cent, with a third of these men pre-Pearl Harbor fathers. The 22-year old men constituted .97 of one per cent, and the men in the 23-25 year old bracket number only approximately 15,000 in an industry which in January had 294,000 employees.

The aircraft industry announced it would seek further deferments only in those cases where the men are of extraordinary value to production of warplanes, either through formal education or many years of shop work and training, or both. Most of the key personnel, AWPC reports, has been developed in the last three years, with many of this highly skilled nucleus in the 23-25 bracket.

Production of ordnance equipment is tapering off in the West to a considerable extent, due to changes in the war program and the building up of large stocks of supplies of ammunition and other items. On the other hand, Naval, Coast Guard and Maritime Commission demands are increasing.

A 6 per cent reduction in magnesium production ordered by WPB resulted in a 50 per cent cut at the Electro-Metallurgical Co. plant in Spokane and Permanente Metals (Kaiser) Co. newest plant at Manteca, Calif. Two eastern plants were shut down entirely, another partially. Permanente was the only one producing at full capacity, and Electro-Metallurgical's outturn was frozen at the present level.

The rapidly growing electronics industry on the Pacific Coast, centered on the San Francisco peninsula, suffered a check when the Government discovered that it was heavily oversupplied with radio tubes. At Eitel-McCullough's Salt Lake City plant two shifts were eliminated and more than a thousand workers affected. Dismissal pay was ordered by the management, ranging up to a week's wages if they had been employed six months or more.

Most of the electronics group had seen the handwriting on the wall for some time, but apparently neither they nor the Government had been able to estimate the inventory of tubes precisely.

Another case of too great a stockpile bobbed up in carbide, with the shutting down for an indefinite period of the Pacific Carbide & Alloys Company plant at Tacoma.

Changes in airplane production include the completion of training plane contracts with Vultee and others, and the cancellation of the order for three big cargo planes from the Kaiser-Hughes set-up.

Alaska's employment stabilization plan was revised at a meeting held in Juneau Feb. 14-15 of the Alaska Management-Labor Committee, so that a worker leaving Alaska for a visit home, or because of completion of the contract on which he was working, is still considered in the Alaska labor pool until he surrenders his certificate and accepts employment elsewhere.

This eliminates the previous barrier against return imposed by the previous necessity of going through formal entry and examination before entering Alaska. W. K. Hopkins, WMC director for the Coast, Governor Gruening and Ben Deming, regional placement chief of WMC, and Henry van Hoevenberg, manager of Alaska Salmon Industry, were in attendance.

(Comment on the "Jeepers Creepers" editorial in February)

K. T. Norris, pres. Norris Stamping & Mfg. Co.

I think editorials such as this one serve a very good purpose in that they help to focus attention on the necessity for planning now for the postwar period. On the other hand, I am not entirely in accord with the implied criticism of what has been done to date.

In measuring the effectiveness of planning to date, many things have to be taken into consideration. The first is that the planning for individual businesses must be done by the heads of those businesses. Unfortunately, the businesses which need the most planning are the ones which are most deeply involved in war work. Not only have the executives of these organizations been deeply involved in our No. 1 job of turning out war materiel, but postwar planning in general has been frowned upon by both the Army and the Navy, on the assumption that it detracted from our No. 1 job of winning the war.

My personal opinion is that we have not lost a great deal of valuable time in getting our postwar planning programs under way. I doubt if very much could have been accomplished had the program started earlier. On the other hand, the production of most war goods has now reached a somewhat stabilized position. Plant expansion is generally completed and production is going ahead quite smoothly. Having reached this stage, it now appears both logical and possible for the heads of organizations which are deep in the production of war goods, to immediately start making plans for the postwar period.

Here in Los Angeles our local Committee for Economic Development, of which I am District Chairman for Los Angeles and Orange counties, is just beginning to function. Most of the top men of the community are being tied into this program, and I have no doubt but that we will be successful in accomplishing our two principal objectives, which are as follows:

1. Analyze what our postwar employment situation is apt to be.
2. Stimulate individual businesses to start their postwar planning now so that these individual businesses will be able to provide their share of employment in the postwar period. C.E.D. is not an overall planning organization. Its primary purpose is to stimulate planning on a company by company basis.

Morris Pendleton, president, Plomb Tool Company

The predominant trend of the population and industry in the United States is from the Northeast to the South and to the West, and the general westward trend is more pronounced.

The industrial east is moving heaven and earth to shut down western marginal war plants to preserve their dominant position in western markets.

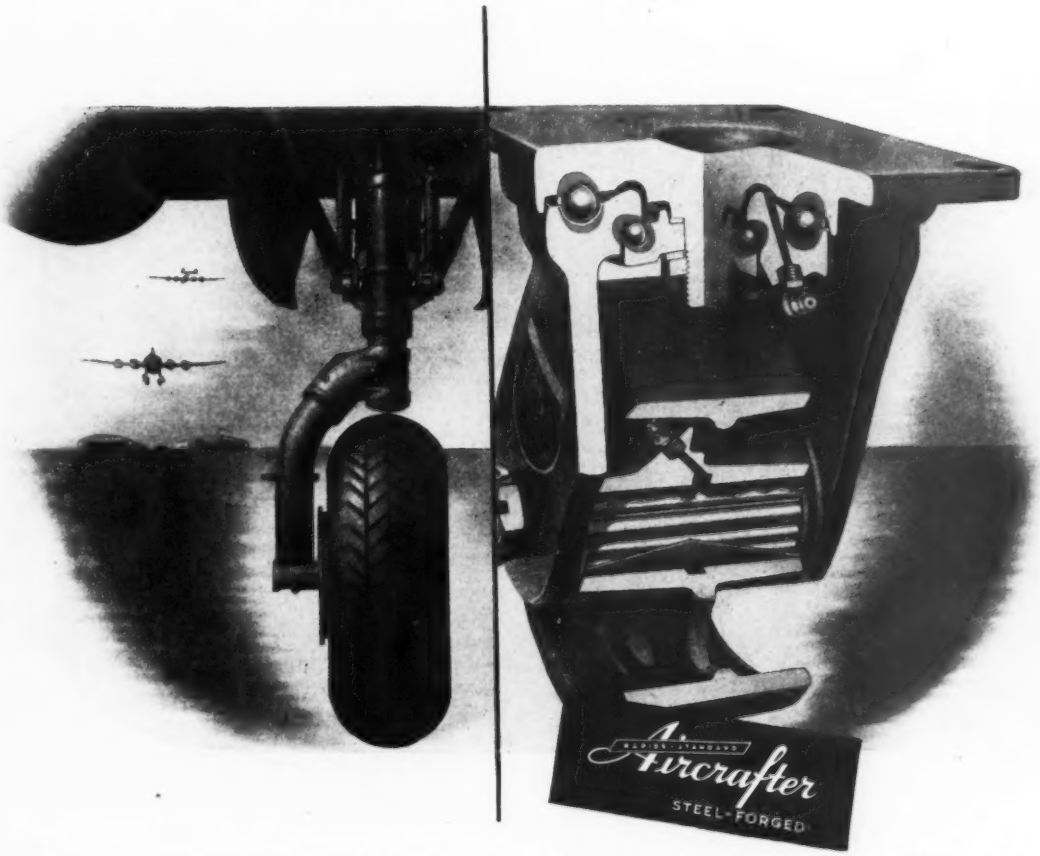
It is our opinion that western industry should be equally active in demanding that any western war plant which has even a fair chance of post-war existence must continue operation. As you state, it will require united action. Otherwise, the advantages we might gain from the industrial boom the war has dropped into our laps would be lost.

A word of caution, obviously, is that we do not take a position which may be untenable, by backing an operation that can only exist with subsidies.

However, I write from the general standpoint of a western manufacturer, and we have definitely proven by our record that we can not only manufacture in the West for the West, but can manufacture in the West for the East.

Landing Gear Performance

FOR MAINTENANCE EQUIPMENT



30 tons of giant bomber sweeping toward earth at 180 MPH, precious lives are aboard, and it is about to contact the hard, unyielding runway of the home port. With smooth coördination, the pilot and modern landing gear gently bring the big ship to a stop.

Many irreplaceable man-hours went into the ship's construction, and hundreds of maintenance hours must follow to keep it in fighting trim. Air depots are busy places. Maintenance parts must also roll with surety and ease. The landing gear of our modern bombers draws a perfect parallel in dependability and performance to Aircrafter Steel-Forged casters. Exclusive Rapid-Flame-Hardened with precision machine ball raceways, they swivel with an ease almost like anticipation as they roll heavy loads. A set of 4 Aircrafters will take on 8000 lbs. They are shock-resistant. They keep tempers sweet and backs untired for the men who "keep 'em flying."

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WESTERNERS AT WORK...

Arizona

Chris Totten, head of the Arizona Retail Lumber & Builders Supply Association, Phoenix, has been appointed alternate member of the Tenth Regional War Labor Board. . . . H. L. Zebold, new superintendent for the Charleston Lead Mines Company, Tombstone. . . . Ira Wagnon geologist with the National Mining & Milling Company, Sunflower. . . . Alfred G. Trott assistant engineer at the New Cornelia Branch, Phelps Dodge Corp. Ajo. . . . R. F. C. Taylor takes off as Assistant Flight Director for Consolidated Vultee, Tucson, and A. A. Hudgin replaces Taylor as Chief of Flight.

California

J. D. Sullivan, president, Hotel Employers Association of San Francisco, and George Hall, president, San Francisco Bay Cities Controllers Group, appointed industry members of the Tenth Regional War Labor Board. . . . Albert A. Arnhym, Solar Aircraft Company consulting engineer, plane comfort research rewarded by being named associate fellow of Institute of Aeronautical Sciences.

H. Russell Amory is new general manager, Aircraft Parts Manufacturers Association, following resignation of C. C. Codding. A. J. Brechtel heads industrial relations section and Wallace Mackenzie in charge of new business service section.

Frank E. Marsh heads up new Washington, D.C. office of San Francisco Chamber of Commerce. . . . W. F. Dietrich becomes chief research engineer for the iron and steel division, Kaiser Company, Fontana. . . . J. Charles Miller senior geologist at the Los Angeles offices of the United States Geological Survey. . . . A. George Stern, chief of western research division, Westvaco Chlorine Products Corp., headquarters at Newark, Calif.

WPB changes: E. F. Halloran, chairman Production Urgency Committee and Deputy Regional Director in charge production, service, radio, radar, etc., succeeding Murray Brookman, resigned to return to private affairs. . . . Don S. Neher, Deputy Regional Director in charge of priorities, compliance facilities, salvage and automotive divisions.

Thomas C. Campbell appointed area director, WMC in Los Angeles and Orange Counties. . . . James L. Feely advanced to Counsel and Frank Carmody promoted to Director of Public Relations, San Francisco Employers Council. . . . George O. Bahrs elected president, William G. Storie executive vice president, Almon E. Roth chairman of the Board on leave of absence as head of new National Federation of American Shipping.

Lee W. Ralston, formerly with California State Dept. of Education, named supervisor of industrial relations, Westinghouse manufacturing and repair department. . . . Sidney B. Shaw, Pacific Gas & Electric Co., appointed Regional Maintenance Consultant to ODT. . . . R. Jack McAfee joins Ryan as assistant to vice president in charge of manufacturing, Mel Thompson promoted to assistant contract administrator, H. F. Wallen steps into shoes of Paul Sauter as general supervisor, Tool Planning and Design, job of assistant tooling superintendent created for Sauter.

On WPB Industry Advisory Committees: Magnesium Sand Casting Indus-

(Continued on Page 46)

MEN ON A MISSION...

The mission is . . . *crushing defeat of Axis terrorists on their own shores.* And every move we make at PAYNEHEAT today is designed to hasten that result! ★ When Victory comes, we'll again turn our "Paynestaking" workmanship to *furnaces,* featuring . . .

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Post-war successor to the central furnace! Quick, clean gas heating and fresh air circulation, *controlled by zones or individual rooms.* ★ Every family that builds or remodels will be a Zone-Conditioning "prospect" for PAYNE Dealers. ★ But now, let's back those *men on a mission* in every way we can! Buy more War Bonds.

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PERFECT timing . . . smooth jerk-free power counts here. For this paper folding machine must be accurate to the split second . . . each cylinder perfectly co-ordinated with the next. A missed second . . . a jerk . . . and the paper is torn or creased.

It's a real job setting up a folding machine . . . getting it properly co-ordinated and timed to fold the paper correctly. And once it's done, power transmission and timing equipment must keep it that way.

Because they transmit smooth, positive, slip-free power and time operations accurately to the split-second, Baldwin roller chain belts are used here, as on so many other industrial drives and timing operations. Their ability to always run "on schedule," to absorb shocks that might otherwise damage delicate machinery . . . their ease of installation and low maintenance are big helps in keeping operating costs to a minimum.

BALDWIN ROLLER CHAIN BELTS GIVE YOU THESE ADVANTAGES:

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2. No power loss regardless of adjustment.
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5. No pre-load to shorten shaft life—not installed under tension.

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BALDWIN

ROLLER CHAIN BELTS

WESTERNERS *(Cont'd from Page 44)*

try—J. A. Weinman, Los Angeles Magnesium Casting Co. . . . Overall Paper Industry—J. D. Zellerbach, Crown-Zellerbach Corp., San Francisco. . . . Wood Tank Industry—Sid Levine, Acme Tank Mfg. Co., Inc., Los Angeles. . . . Pressed Metal Products Industry—K. T. Norris, Norris Stamping & Mfg. Co., Los Angeles.

Southern Pacific changes: J. W. Corbett to general manager. . . . R. E. Hallawell, assistant general manager. . . . G. C. Baker, general superintendent of transportation. . . . Howard J. Carroll, secretary. . . . E. E. Mayo, chief engineer. . . . C. J. Astrue, assistant chief engineer.

Colorado

Michael F. Fominyh, now mining engineer and geologist, U. S. Vanadium Corp., Rifle. . . . Henry R. Wardwell, junior geologist and Louis P. Gaggini member geological staff, Union Mines Development Corp., Grand Junction. . . . Donald E. Hollard in engineering department, Empire Zinc Div., New Jersey Zinc Co., Gilman. . . . Frank B. Saxton, mine superintendent, Western Fluorspar Corp., Walden. . . . V. L. Board appointed acting regional director, WPB. . . . E. E. Bosin made manager of Omar, Inc., Denver.

Idaho

Loyal J. Lohse on engineering staff, Hecla Mining Company, Burke. . . . Theodore Hicks, formerly Burley office, U. S. Employment Service, made manager Caldwell office replacing T. E. Wright, resigned to become assistant state supervisor and field agent for vocational rehabilitation.

Montana

Claude O. Dale, junior geologist, Anaconda, transferred from Chrome Unit at Dean to Basic Magnesium, Inc., Nevada. . . . Robert A. Blake now with Domestic Manganese and Development Company, Butte.

Nevada

Robert L. Dean advanced to executive assistant to E. H. Snyder, president and general manager, Combined Metals Reduction Co.; L. G. Thomas takes Dean's old job, general mine superintendent, and Sam S. Arentz, Jr., named mine superintendent. . . . C. H. Grant, Sparks, moved up to superintendent of transportation, Southern Pacific and J. A. McKinnon takes Grant's former job as assistant superintendent, Salt Lake division. . . . George H. Wigton now supervising tungsten milling operations for Metals Reserve Company at Getchell mill, Red House. . . . Robert Durk now assistant engineer, Combined Metals Reduction Company, Pioche.

Jasper T. Robertson, who has been with RFC, Reno, appointed senior mining engineer, Ores and Concentrates Section, Zinc Div., WPB, Washington, D.C. . . . Frank W. Woodman appointed chlorine and caustic superintendent, Basic Magnesium, Las Vegas. . . . La Mont West now superintendent, M.G.L. Mining Corporation, Reno. . . . Harold L. Hazen new plant manager, Manganese Ore Company succeeding Walter P. Hester who has joined staff of Wells, Inc., Reno.

New Mexico

John H. Soule, mining engineer, U. S. Bureau of Mines, now supervising fluorspar project in Lincoln County.

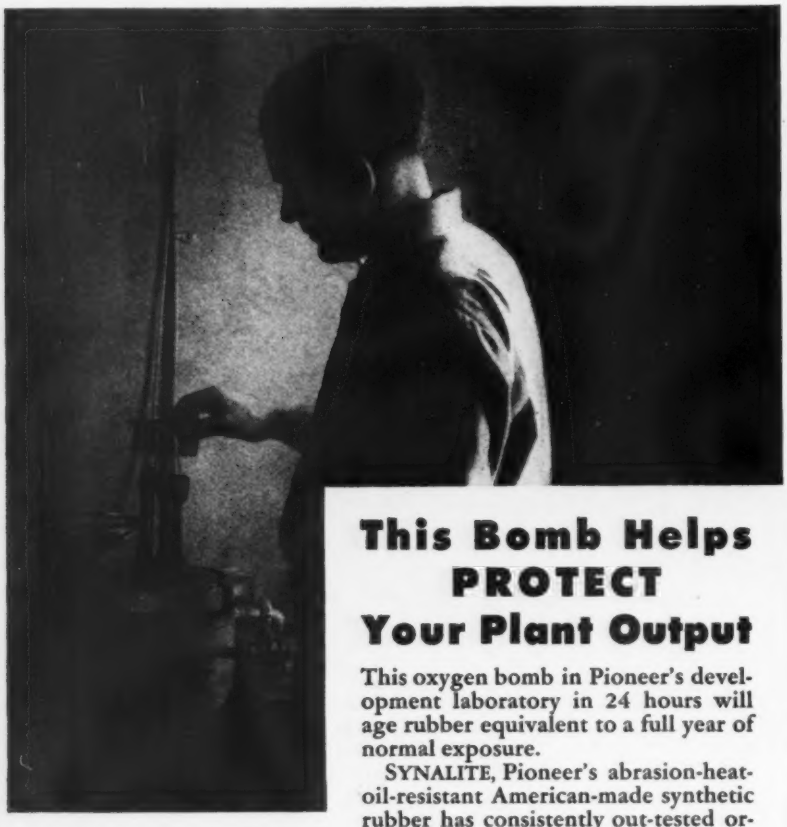
Oregon

Harry A. Spieth is new general superintendent, Oregon Steel Foundry Company, Portland. . . . Henry F. Chaney, vice president, Baker-Fentress & Co., Chicago and Portland, elected president Coos Bay Lumber Company, succeeding Homer W. Bunker who remains as a director. . . . Earl C. Reynolds, manager Klamath County Chamber of Commerce for 17 years, appointed assistant manager of the National Chamber's Western Division, headquarters at San Francisco.

Utah

Vard H. Johnson, Pleasant Grove, now assistant geologist in fuels section, U. S. Geological Survey, Washington, D.C. . . . Joe S. Yamamoto, Salt Lake City, now

(Continued on Page 48)



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WESTERNERS *(Cont'd from Page 46)*

metallurgical engineer in foundry heat-treatment division, Eimco Corp.

Washington

Arthur J. Anderson, Walla Walla, made president and general manager, Northwest Cities Gas Co., succeeding Howard M. Thomas, retired. . . . E. L. Linbeck elected secretary and Val Paulson, treasurer, Pacific Plywood Corp. . . . W. L. Miller district automotive manager, production-service division, WPB, succeeding Hugh Baird. . . . L. J. Searle acting factory general superintendent, Boeing, replacing Leo Castle; George Molitor takes Searle's former job as assistant factory general superintendent. . . . James A. Edington appointed manager Booth Fisheries Corp., with supervision over Alaska, Prince Rupert, B.C., Seattle and other West Coast fish operations of the corporation. . . . Sam B. Stocking elected president of Shaffer Terminals, Inc., also becomes president Terminal Warehouses, Inc., Tacoma. . . . Earl H. Houston named general sales manager, Long-Bell Lumber Co., and C. E. (Cliff) Hadley advanced to manager of western sales.

Wyoming

J. R. Bromley appointed state highway superintendent, succeeding J. G. Smith who plans to return to the contracting and construction business. . . . Walter I. Barnes is with Monolith Portland Midwest Company, Laramie.

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Associations Elect

Mining Association of the Southwest: Howard Kegley, president; H. W. Howe, vice president; John Herman, second vice president; B. M. Snyder, third vice president; Victor Hayek, secretary-treasurer. . . . Boulder County Metal Mining Association: Elmer Hetzer, president; Harry Williamson, vice president; John Foote, treasurer; George Jump re-elected secretary. . . . Colorado chapter, American Steel Warehouse Association, Inc.: H. V. Waterman, president; J. H. Singleton, vice president; A. M. Hays, secretary treasurer.

California Wine Institute: Herman L. Wente, president; J. B. Cella, first vice president; John B. Ellena, second vice president; Edmund A. Rossi, third vice president; Louis Petri, treasurer; H. A. Caddow, secretary-manager; A. R. Morrow, chairman, board of directors. . . . California State Brewers Association: Karl F. Schuster, president; William P. Baker, first vice president; Eugene S. Selvage, second vice president; Stewart McKee, third vice president; Joseph Goldie, treasurer; James G. Hamilton, secretary.

Aircraft Parts Manufacturers Association: T. T. Arden, president; C. L. Tanner, vice president; H. G. Bley, secretary; H. C. Thomas, treasurer. Executive Committee: F. W. Wilkins, W. C. Buchterkirchen, G. W. Stratton, T. E. Colvin, Morris Pendleton.

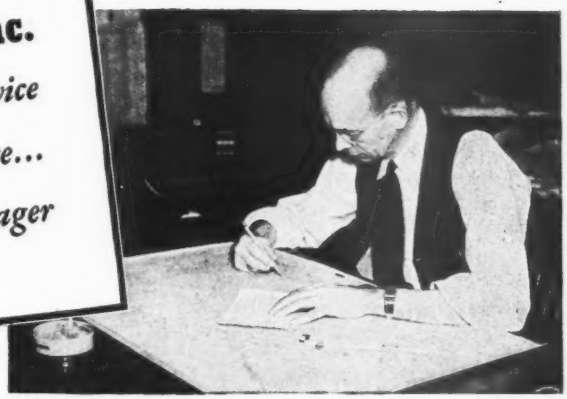
Nevada Section, American Institute of Mining and Metallurgical Engineers: Robert S. Moehlman, chairman; Paul Gemmill, vice chairman; Jay A. Carpenter, secretary treasurer. Executive Committee: Clyde E. Arrington, Ott F. Heizer, Harley C. Lee, Robert O. Jones, Paul J. Sirkegian. . . . West Coast Mineral Association: George H. Waterman, president; M. H. Van Nuys, vice president. . . . American Institute of Mining and Metallurgical Engineers: Directors: J. C. Kennear, McGill, Nev.; Robert W. Thomas, Ray, Ariz.

West Coast Lumbermen's Association: Dean Johnson, president. . . . Oregon Coast Lumber Operators' Association: David Miller, president; Ray Jeub, vice president; Phillip Gilbert, treasurer; E. H. Card, secretary-manager.

National Lumber Manufacturers' Association: George T. Gerlinger, Portland, president; A. J. Voye and O. R. Miller, regional vice presidents. . . . American Forest Products Industries, Inc.: A. J. Glassow, Bend, Ore., president. . . . Pacific Division, National Wooden Box Association: Percy V. Burke, president; Morris Milbank, vice president; A. F. Blocklinger, treasurer; J. H. Dobbin, secretary-manager.

TIMBER STRUCTURES, Inc.

extends Pacific Coast & Export Service with opening of San Francisco office... Arthur P. Cramer, Engineer-Manager



In order to establish complete co-operation and quick contact with industry in the coast and mountain states on their current and postwar building plans, Timber Structures, Inc. has opened a sales-engineering office in San Francisco.

Cramer in Charge

Arthur P. Cramer, Timber Structures engineer, is in charge of the office. Mr. Cramer is well known to contractors, architects and engineers on the Pacific Coast. A consulting engineer in his own right, he has been associated with Timber Structures for the past three years and has been identified with many outstanding timber construction projects, one of which is the navy blimp dock at Moffett Field, California.

To building men responsible for erecting new plant structures of various kinds, Mr. Cramer and his staff can be of special service. Through Timber Structures' policy of "Engineering in Wood" it has been our privilege to work closely with various industries and with governmental agencies.

"Engineering in Wood"

"Engineering in Wood" covers many things. Research, design, engineering, prefabrication, transportation, erection. All are part of our service to architects, plant management, engineers and contractors. All are responsible for the construction speed, economy, strength and permanence of roof trusses and other timber structures and items furnished by us.

Inquiries Invited

We invite inquiries as to work performed and as to our ability to serve you in timber and allied structural materials. For evidence of work we have done write direct for literature.

TIMBER STRUCTURES, INC.
Portland 8, Oregon
Seattle, Eugene, San Francisco, New York, Trenton

TIMBER STRUCTURES PLANT, Portland, Ore. *(below).* Located in the heart of the nation's structural timber area. Yearly production in excess of 80 million board feet of prefabricated lumber.

Western Oil Shale Development Opens

One of the best-informed writers at the Nation's Capital, Arnold Kruckman, presents each month authoritative comments on political developments and their practical application to industry of the West. Any reader who wishes additional information may write to him directly, using business letterhead, at 1120 Vermont Avenue, N.W., Washington, D.C. Inquiries will be answered free of charge. You also are invited to contact him personally in Washington. Copies of pending congressional bills may also be obtained free of charge.

By ARNOLD KRUCKMAN

WASHINGTON, D.C.—The law which finances thorough experimentation with oil shales and coal gas should be in force by the time this is read. There will be $30,000,000 to build and operate pilot plants.

Without doubt the oil shale investigation will be localized on the Western Slope of the Rockies, and the coal gas plants should include at least one establishment on the Pacific Coast in the Northwest. The operation will be conducted by the Bureau of Mines.

The primary purpose obviously is to assemble engineering data to be made available for any person or group planning to engage in the business. The law specifically prohibits these experiments being used to manufacture a product which, during the experimental stage, may be sold in competition with any commercial industry. The bulk of the experimental product is to be sold at cost.

War and Navy departments will give these experiments right-of-way. Certain quotas are to be sold at going prices in the open commercial market solely for the purpose of determining the commercial aspect of the investigation.

Obviously this undertaking is very important to the West Slope. It means that the huge and widespread oil shale deposits, long a matter of discussion, may be converted to commercial uses for profit, and for the benefit of the industries in the West which require fuel.

Moreover, it is extremely important to the armed services, which will require more supplies. It is a large forward-looking step, consonant with the need often reiterated by those scientists who give us a regular time schedule for the exhaustion of our oil and coal resources.

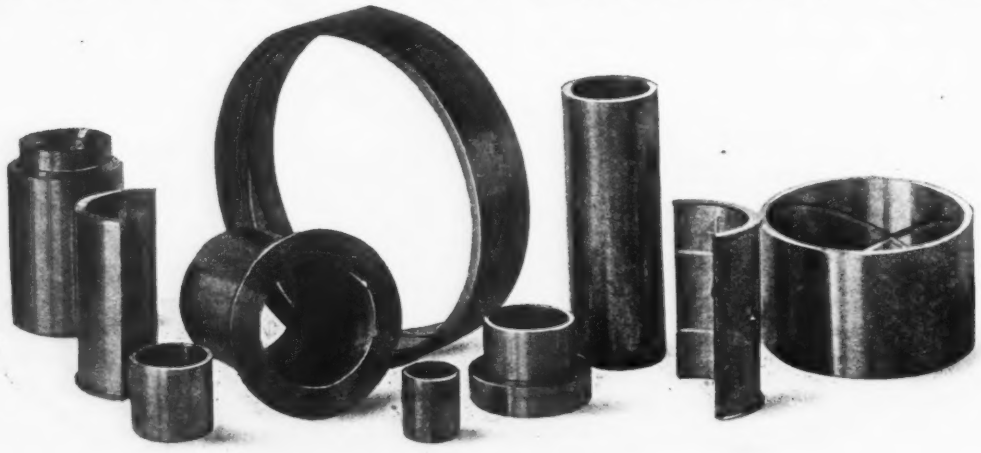
The law was formulated by Senator Joseph C. O'Mahoney in S. 1243, enacted without much debate by the House and the Senate. The action is the first concrete result of Senator O'Mahoney's exhaustive report on the unused mineral resources of the West. It is reasonable to assume that other developments will follow.

Wood-waste alcohol pilot plants apparently will be validated by another bill which is on the eve of introduction in the House by Representative Fred Norman of Washington. It will provide authorization for the appropriation of an indeterminate sum to establish these plants in Washing-

(Continued on Page 52)

SUBMIT YOUR DRAWINGS

Our highly specialized equipment can produce your bronze bushings faster and more economically — any size or shape to your blue print specifications.



Western Made Bronze Products for Western Industry

KINGWELL BROS., Ltd.

SAN FRANCISCO *Sales Representatives in All Pacific Coast Cities* CALIFORNIA

You get all these Great Features in SKILSAW DRILLS!

1. Die cast aluminum bodies for lighter weight, greater strength!
2. 100% anti-friction bearing construction eliminates vibration!
3. 100% overload capacity switch for trouble-free operation.
4. Extra capacity motor for fastest drilling, longest life.
5. Helical cut gears of finest steel for quiet, smooth operation.

• Model "80" SKILDRILL—the lightest, most compact ¼ in. electric drill made. Weighs only 8 lbs., overall length 11½ inches. Pipe handle is detachable.

• Model "45" SKILDRILL—capacity ¼ in. in steel, ½ in. in wood. Weighs only 2¾ lbs. Fits the palm of your hand easily.

• Model "64" SKILDRILL—¾ in. heavy duty drill with 100% anti-friction bearing construction. Perfect for close-quarter drilling . . . pipe handle is detachable.

It's no wonder SKILSAW DRILLS are preferred in all industry . . . *they stand the gaff!* They've got the extra power that means top load speed on all drilling, boring and reaming jobs. They've got the *perfect* balance and compactness that means easier handling in any position. They give you greater output per man with less effort!

And SKILSAW DRILLS cost less to operate because they're *quality-built throughout* to stand up under today's round-the-clock production schedules!

Ask your distributor for a convincing demonstration of SKILSAW DRILL superiority today! Most models are available from his stock.

SKILSAW, INC.
4745 Winnemac Ave., Chicago 30, Ill.
FACTORY BRANCHES
2645 Santa Fe Ave., Los Angeles, Calif.
2065 Webster St., Oakland 12, Calif.
1115 E. Pike St., Seattle 22, Wash.
724 W. Burnside, Portland 9, Ore.

ARMY NAVY

PLANNING FOR AFTER-THE-WAR?
Let Skilsaw Field Engineers help you now to plan "tooling-up" for peacetime production with Skilsaw's new post-war tools.

SKILSAW PORTABLE ELECTRIC TOOLS

MAKE AMERICA'S HANDS MORE PRODUCTIVE

KRUCKMAN *(Cont'd from Page 50)*

ton, Oregon, or Idaho, as the Secretary of Agriculture may decide.

The bill stresses that pilot plants shall in no sense be used for any purpose except to carry investigations to the point where commercial operators may take over. Competition with lumber mills and others, engaging in making the wood-waste alcohol, is expressly forbidden. The object will primarily be research, and to make the result of the research available to anyone.

It is proposed the pilot plants in the Northwest shall carry experimentation from the point where the Forest Service left off at Marquette, Mich. The Federal Government in its laboratory in Marquette proved the realism of the formula beyond debate. The final purpose of the pending legislation is to make it possible to enable all lumber mills, in the West and the East and the South, to use the demonstration as a springboard for their commercial enterprises.

The bill has the approval of the Department of Agriculture, and the work in the pilot plants will undoubtedly be amplified in the Department of Agriculture Regional Laboratories, such as the laboratory at Albany, California. It is anticipated these Regional Laboratories will extend the investigation in order that dairy cattle feed stuffs may be developed, and to make new resources available for production of plastics.

It is curious that plastics, like light metals, do not seem to have the enthusiastic support of WPB and kindred agencies in Washington. It would probably be more correct to say that plastics related to the West Slope do not kindle the imagination of the WPBers. Apparently light metals, almost in their entire range, do not have much appeal here as potentials in the postwar economy. The bulk of the light metals originate on the Western Slope of the Rockies.

This attitude here should not be regarded as a sinister effort to suppress the aspirations of the West. A truer appraisal of the situation probably is that Easterners naturally chart the economy of the future with an inevitable Eastern slant. It is logical that they should be reluctant to see a new addition to the national economy rise in the West, when they sincerely feel the resources of the East have not been exhausted.

More Shutdowns Coming

Industrialists, transportation interests, and bankers, in essence, inevitably feel about the same as the merchant in a small town who does not welcome competition when he thinks he can take care of the existing business. He honestly feels there should be no competition until population makes more service necessary.

Fundamentally, this is the reason it seems possible from three to six aluminum pot lines may be closed down on the Pacific Coast, and the magnesium industry at Las Vegas, Nevada, may be curtailed to the point of extinction. We have just had word again that something must be done about the aluminum plants out there; and you are obviously familiar with the fight Senator McCarran is waging to prevent WPB from reducing production at the Basic Magnesium in Las Vegas, scheduled to be cut not less than 40 per cent.

This reduction is coupled with the frank implication that there will be no need for magnesium nor for most of the other light metals after the war. Charles E. Wilson, who once uttered the classic observation that aluminum was "running out of our ears," now says we are suffering the same phenomenon in magnesium and steel and similar products that look so hopeful in the Far West. Moreover, Mr. Wilson appears to feel sincerely there is no reason to hope for much in this field after the war.

There is considerable speculation here about the reason for this attitude, not only on the part of the vigorous and candid Charles E. Wilson, but on the part of Phil Wilson, who sits at the helm of the metals part of WPB; and we hear it from the pontifical Donald Nelson, and others.

(Continued on Page 54)

WALWORTH

Catalog 42

VALVES—FITTINGS—PIPE

Yours For the Asking——

This is an indispensable handbook for all mechanical engineers, piping contractors and users of pipe, valves, and fittings.

Containing charts and formulae, it is an up-to-the-minute ready reference for the busy engineer or contractor, helping to solve your piping problems. You will find the engineering section will save you time and money.

SEND FOR YOUR COPY NOW

All sizes and types of products covered by this new catalog are keyed to the present Federal Limitation orders.

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Distributors of WALWORTH Quality Products and Allied Industrial Lines

"BRING YOUR PIPING PROBLEMS TO WALWORTH"

665 SIXTH STREET · GArfield 3950 · SAN FRANCISCO 1, CALIF.

A finer, more abundant living
TODAY and TOMORROW
because of Petroleum Chemistry
THE WHEEL OF BETTER LIVING
Some 6,000 years ago, man discovered that oil from the earth
Oil became an industry, with research and chemical laboratories
Today, discoveries in hydrocarbons are helping to shape a new
world. Synthetics, new motor fuels and countless other amazing
products, now in the war, will later supply our every want in
clothing, shelter, transportation, recreation and, perhaps, even
food. And the wheel of better living rolls on!
We, of Tretolite, are proud to be in the service of the oil indus-
try, providing accurate field tests and essential chemical com-
pounds for the demulsification of crude oil.
TRETOLITE COMPANY • Manufacturing Chemists
Webster Groves, St. Louis County, Mo. • Los Angeles, Calif.
Tret-O-lite
Complete Service for Every Field
DEHYDRATING
DESALTING

Tuned to a note of friendliness with a tribute for startling achievements—that is the keynote of the unusually interesting 1944 series of 2-color page advertisements developed for our client, Tretolite Company of Webster Groves, St. Louis County, Mo

To have helped guide Tret-O-lite sales to the enviable goal of world-wide leadership in a few short years through intelligently planned, timely and well executed advertising and counsel—that has been *our* job!

PLANNED

PREPARED

PLACED BY

If you desire *seasoned* industrial advertising counsel, call on The McCarty Company. A frank, common-sense discussion will convince you that this is the balanced advertising service that suits your demands. A call involves no obligation.

THE McCARTY COMPANY

A Complete Industrial Advertising Service Since 1919

LOS ANGELES 15, BENDIX BUILDING • SAN FRANCISCO 5, RIALTO BUILDING
PITTSBURGH 19, KOPPERS BUILDING • FORT WORTH 2, DAN WAGGONER BUILDING
MEMBER...AMERICAN ASSOCIATION OF ADVERTISING AGENCIES

KRUCKMAN *(Cont'd from Page 52)*

who sit upon the temporary thrones. There are the usual suggestions about devious and involved industrial subtleties and intrigues; but sober observers do not read sensational inferences in the developments.

Most of us feel there is a sort of fat-headed obtuseness not unknown among business men in the upper brackets, and found to become aggravated when men remain in Washington any length of time. It is rare when some of the magnificence of the colossal power inherent in this vast Government does not obfuscate the senses of those who come under the spell.

Senator McCarran continues to develop the aim of his industrial decentralization committee. The members of the Senate and the House are building up a record to support the report to be issued soon.

Senator Abe Murdock of the committee went out to Utah in March, armed with subpoenas, to hold further hearings about the paralysis of the Geneva steel plant. It is possible he may go to the Northwest and look into that steel and nickel plant proposed in 1942, and apparently welcomed warmly by WPB, but which never has been allowed to come into existence.

Senator Gillette also has begun to delve into the subject here, and may produce vivid testimony as his inquiry unfolds. It will be sound logic to give these committees, particularly Senator McCarran's main committee, every aid and every comfort, if you are a Westerner.

Many Westerners in the capital were interested to read in the San Francisco newspapers that Frank E. Marsh, former executive of the OPA, has opened a Washington office for the San Francisco Chamber of Commerce. It is located at 710 Fourteenth Street, N.W. Mr. Marsh plans to make the place a nerve center for the interests of the whole Western Slope.

San Francisco as a community thus becomes appropriately the first group to follow the example of the National Reclamation Association in providing the means by which all elements in the capital are brought together to work in unity for issues of common regional benefit. The group in the reclamation orbit meet informally once a week to do some remarkable team work. Many diverse interests are represented.

Mr. Marsh plans to develop some special cohesion between the resident representatives of the Chambers of Commerce of Seattle, Portland, Los Angeles, San Diego, Salt Lake City, and Denver; and he proposes to invite other commercial and industrial trade organizations from the West Slope, located here, to join them. Apparently the Western solidarity, long hoped for by the people in Congress and other parts of Government, is rapidly crystallizing here.

YOU CAN'T **FIT** A SQUARE CLOSURE INTO A ROUND OPENING.....

—But You Can Call I. F. Schnier to Help Solve Closure Problems

Everyone knows that a square closure will never fit a round opening tightly or securely—but there are times when the answer to many closure applications is not quite so simple or obvious. Therefore, when you're faced with a problem, call in I. F. Schnier Company for sound advice. With more than 30 years of specialized knowledge and experience in packaging and closures to draw on, I. F. Schnier Company is well qualified to render real service and assistance.

SERVING THE ENTIRE WEST

- ★ ARMSTRONG metal and molded caps, straight, tapered corks, wood topped corks.
- ★ DUPONT "CEL-O-SEAL" caps, opaque bands & "WIND-O-BANDS"
- ★ Bast & Wire Netting
- ★ Wire hoods & discs
- ★ Bung seals
- ★ Laboratory stoppers
- ★ Excelsior wraps for bottles
- ★ Capping & Corking Machinery.

MOST COMPLETE LINE OF CAPS & CLOSURES IN ALL TYPES & SIZES IN THE WEST.

SINCE 1909

I. F. SCHNIER *Company*

683 Bryant St., San Francisco, California

LOS ANGELES • FRESNO • PORTLAND • SEATTLE

N.A.M. Conference Schedules Are Set

National Association of Manufacturers' annual series of industrial conferences on the Pacific Coast will be held this year as follows:

Portland, May 1-2, Multnomah Hotel
Tacoma, May 3, Hotel Winthrop
Seattle, May 4-5, Olympic Hotel
San Francisco, May 8-9, Palace Hotel
Los Angeles, May 15-17, Biltmore Hotel

Among the speakers will be Walter R. Weisenburger, executive vice president of N.A.M., "N.A.M. blueprints and the American future"; Robert M. Gaylord, president of Ingersoll Milling Machine Co. and N.A.M. president, "Industry works for a better America"; James A. Emery, general counsel of the N.A.M., "A ceiling on bureaucrats."

Panel discussions will include contract termination, price control, and labor relations, with Gen. A. J. Browning, J. D. Greensward, assistant treasurer of Allis-Chalmers and Lambert Miller, associate counsel of N.A.M. as panel leaders.

Industrial Relations

A Pacific Coast Industrial Relations Conference will be held at the Santa Barbara Biltmore Hotel, Santa Barbara, May 8-12, sponsored by the National Association of Manufacturers and the Personnel Conference of Los Angeles.

Small Firms Protest Ship Repair Order

Owners and operators of ship-maintenance and repair firms met in Seattle last month to protest regulations of the United States Maritime Commission providing for the awarding of ship repairs by general agents on a lump sum (fixed price) basis in amounts not exceeding $1,000, unless the firm has a master contract.

Representatives of the smaller firms said the regulations will give all of the work to the larger shipyards and put the smaller companies out of business, because under the regulations they would be compelled to obtain letters from holders of master contracts, the large shipyards saying they were unable to do the work, before obtaining repair and maintenance jobs.

Stratoliner Designed

Douglas Aircraft Company, who had nothing specific to predict about post-war trends in types of aircraft for the symposium published in the March issue of WESTERN INDUSTRY, have now announced that a 721-commercial stratoliner designed primarily for transoceanic airlines is now in the mock-up stage. The plane will be capable of carrying 86 passengers as a day plane and 76 as a sleeper, will be powered by four radial engines, and will have a wing spread of 173 feet, fuselage length of 123 feet and an overall height of nearly 44 feet.

Oregon Mill Planned

Plans for construction and operation of a sawmill of 100,000 feet daily capacity at Dillard, southern Douglas County, Oregon, have been announced. Embraced in this project, to be operated by Graham Griswold of Portland and associates as the Dillard Lumber Company, is the purchase of 50,000,000 feet of timber in the neighboring locality of Olalla. A combined mill and pond site of ten acres has been bought at Dillard. It is planned to have the plant in operation by late summer, with a crew of approximately 150 men.

Fertilizer From Ore

A plant has been planned in the Las Vegas, Nevada, area by Metals Reduction and Chemical Company for manufacture of fertilizer from base metal ores. The process was developed by George E. Ankers, chemist and metallurgist. The proposed unit is expected to treat 100 tons of ore per day.

Over Ceiling Price

Charged with selling a tractor for $702.50 more than the ceiling price, L. E. McDow, Stockton, California, a salesman for the California Tractor and Equipment Company, was fined $500 and placed on one year's probation by Federal Judge Martin I. Welsh.

Where Women are Employed In Industry

Reduce Fatigue... Make Lifting Easy WITH CURTIS AIR HOISTS

If you are considering employing more women in your plant, you can convert most manual lifting operations, make tough jobs easy, and speed up your output with Curtis Air Powered Hoists.

Many heavy lifting jobs, formerly requiring male labor, may now be accomplished quickly and easily by women, using Curtis equipment.

Curtis Air Hoists provide these important advantages:

- Smooth, fast, accurate control of loads
- Low first cost — lowest operating expense
- Light weight — pendant, bracketed, or rope compounded types
- Immunity to abuse or overloads
- One-man or woman operation—fingertip control
- Do not require skilled labor

Hundreds of war production plants have increased production efficiency, reduced worker fatigue, saved thousands of man-hours by solving many material hoisting problems with Curtis equipment. Write for full information and free booklet, "How Air Power Is Being Used in Your Industry."

CURTIS

Sales Representatives:
ED. CROWLEY, 509 6th St., San Francisco, Cal.
O. J. THOMAS, 1429 S. W. 6th Ave., Portland, Ore.

CURTIS PNEUMATIC MACHINERY DIVISION of Curtis Manufacturing Company
1954 Kienlen Avenue, St. Louis, Missouri

● Please send me your free booklet, "How Air Is Being Used in Your Industry," and further details concerning Curtis Air Hoists.

Name.....
Firm.....
Address.....
City.....State.....

THE WESTERN OUTLOOK . . . NEWS . . . STATISTICS . . .

THE PICTURE

War production contract awards in the West for January indicate a net gain of 3.1 per cent over December, the best showing in recent months. The figures substantiate official assertions that Western facilities are being used to the fullest extent that manpower is available and that the decline in total employment represents better labor utilization and increased efficiency. Electric power companies in general feel that the peak of demand has about been reached, but that any decline is a long way off. Some of the companies are looking ahead to even greater demand.

Aircraft—*1.8 Per Cent Gain*

Ten more planes, representing an addiitonal 577,000 pounds of weight, was the February gain in West Coast airplane production over January. A short month and storm conditions prevented the increase being greater. The increased poundage amounted to 1.8 per cent gain over January. On a basis of using the average pounds per month in 1942 as a norm or 100 per cent, the January 1944 production on the West Coast was 233.1 and the February outturn 237.3 per cent. The average index for 1943 on the same basis was 185.7. Trend toward heavier planes is shown in the figure of 9,288 average weight per plane in 1942, and 12,639 pounds in February 1944.

	No. of Planes	*Total Poundage*
December 1943	2,527	30,880,000
January, 1944	2,559	31,892,000
February	2,569	32,469,000

Ships—*7 Per Cent Less*

A short month in February and the slower rate of production on Victory ships reduced the Pacific Coast output of Maritime ships 7 per cent below the total deadweight tonnage in January. In all, 59 oceangoing vessels were delivered, amounting to 585,000 tons. There were also five tugs and barges, total deadweight 4,000 tons.

Monthly figures below:

	No. of ships	Thousands of deadweight tons
January, 1943	54	530
February	70	641
March	80	772
April	78	792
May	84	816
June	81	869
July	77	844
August	85	989
September	80	838
October	76	787
November	78	776
December	95	969
January, 1944	67	633
February	59	585

(Includes destroyer escorts and small aircraft carriers, but not larger naval vessels built by the navy itself. Also includes concrete barges, but not tugs or wooden barges. Tonnage figures from September on are adjusted, previous months unadjusted. Deadweight tons are used as a rough measure of the cargo carrying capacity of the ship. All figures from U. S. Maritime Commission statistical department.)

Lumber—*Demand Races Output*

With a continuing mild winter keeping the woods open and the mills supplied with logs, the West Coast lumber industry at the end of February was 39 per cent ahead of its production on the same date last year, or by 360,000,000 board feet, according to the West Coast Lumbermen's Association. War requirements continue two or three jumps ahead of the sawmills, however; especially those for shipping lumber—box, crating, and the like. Estimated needs for the year in lumber required for packaging and shipping war items run to 17,000,000,000 board feet—exactly half of the national lumber industry's total estimated production for the year. WPB is considering a rather drastic form of rationing under which use of lumber will be restricted to a point that will keep well within available supply.

Cumulative figures for eight weeks in 1944 in thousand board feet are as follows:

	1942	1943	1944
Production	1,295,371	924,679	1,287,056
Orders (net)	1,475,567	1,044,682	1,376,298
Shipments	1,314,768	1,202,057	1,245,294

Western Pine Association figures covering Idaho White Pine, Ponderosa Pine, Sugar Pine and associated species for the current year to March 4 are as follows:

	1943	1944
Production	455,255	510,000
Orders	656,570	631,970
Shipments	673,848	649,903

Surplus—*Flow Becomes Freer*

Plates and sheets are still critical, and little or none is available in surplus stocks. Cold finished bars and shapes are not too plentiful, but there is an abundant inventory of cold finished strip, also structural shapes, hot rolled bars and shapes; also a fair inventory of wire, pipe and tubings.

Amendment of WPB Priorities Regulation No. 13 has caused freer flowing of steel, both in controlled materials and in fabricated form. Many Class B products have been added, and miscellaneous materials, including building materials, chemicals, textiles, copper and aluminum.

February flow of materials in and out of WPB surplus stocks for the coast was as follows:

	Outgoing	Incoming
Steel	7,264,462 lbs.	7,875,754 lbs.
Copper	284,498 lbs.	519,646 lbs.
Aluminum	67,156 lbs.	93,953 lbs.
Total All Controlled Materials	7,616,116 lbs.	8,489,335 lbs.

Used machinery valued at $1,323,713 was moved, and $286,356 of miscellaneous materials.

War Production Contracts—*Slight Gains in Net Monthly Award Totals*

In Thousands of Dollars—Source: War Production Board Statistical Division

	MONTANA	IDAHO		WYOMING	COLORADO			N. MEX.	ARIZONA			UTAH		NEVADA	
	All Other	Ships	All Other	All Other	Aircraft	Ships	All Other	All Other	Aircraft	Ships	All Other	Aircraft	All Other	Ships	All Other
July	852	...	1,319	5,689	...	56	1,522	142	10,000	..	1,399	...	1,131	...	1,144
August	...	...	926	693	...	...	....	263	....	..	....	...	586	...	1,538
September	472	...	203	3,367	...	587	4,363	83	....	..	....	847	2,204	...	1,357
October	2,770	320	757	65	260	...	6,185	178	....	..	6,078	...	726	...	3,971
November	611	134	—61	57	...	263	5,488	860	....	..	2,705	...	1,643	...	89
December	1,778	...	1,007	4,604	...	...	6,969	319	5,826	67	373	...	4,232	...	—3
January	....	...	370	1,280	...	...	125,636	824	. ..	112	66	...	778	...	85
Total from June, 1940	14,389	639	8,092	21,808	1,366	2,308	388,982	4,080	38,599	179	22,890	847	166,969	156	12,534

	WASHINGTON			OREGON			CALIFORNIA			TOTAL		
	Aircraft	Ships	All Other	Aircraft	Ships	All Other	Aircraft	Ships	All Other	Aircraft	Ships	All Other
July	616	—11,339	24,859	—688	40,816	5,285	850,816	13,076	57,964	860,744	42,609	101,308
August	5,000	136,822	9,198	...	179,578	31,624	625,192	66,030	242,897	630,192	382,430	287,725
September	4,716	12,205	22,554	...	4,147	7,652	81,700	38,378	79,449	86,416	55,317	121,704
October	2,869	9,762	10,469	28	23,908	19,246	27,738	198,299	55,374	32,895	232,289	105,819
November	517,863	22,474	15,703	842	181,468	4,757	10,632	164,992	62,377	529,377	369,331	94,229
December	319	6,006	74,929	...	46,521	—8,392	59,345	15,051	237,041	65,490	67,645	322,857
January	...	1,549	23,782	...	7,803	12,600	2,390	280,712	46,941	2,390	290,176	211,462
Total from June, 1940	1,881,983	1,845,974	441,997	1,202	1,069,855	138,555	8,777,603	3,951,601	1,474,030	10,701,600	6,870,712	2,694,338

Electric Energy—*Upward Curve Is Slowly Flattening Out*

Production of Electric Energy for Public Use—In Thousands of Kilowatt Hours—Source: Federal Power Commission

	Montana	Idaho	Wyoming	Colorado	New Mexico	Arizona	Utah	Nevada	Total Mtn.	Washington	Oregon	California	Total Pacific
January, 1943	213,629	102,021	19,710	89,621	37,364	309,377	61,283	235,346	1,068,351	661,838	358,264	977,670	1,997,772
February	195,179	96,982	18,054	79,624	34,048	190,949	44,459	212,981	872,276	616,219	327,065	996,819	1,940,103
March	211,314	97,021	19,452	87,336	36,960	216,865	50,058	265,277	984,283	693,966	358,817	1,107,202	2,159,985
April	181,181	118,927	20,262	82,131	38,728	222,445	49,104	247,139	959,947	682,966	348,953	1,132,227	2,164,146
May	205,695	122,700	26,558	81,677	38,266	265,685	47,694	269,825	1,058,010	698,471	389,494	1,239,465	2,327,430
June	201,687	115,247	29,316	78,842	38,428	280,268	45,862	278,148	1,067,798	697,763	370,026	1,272,391	2,340,180
July	217,075	123,272	34,675	85,943	40,758	322,526	48,909	274,703	1,147,861	704,949	392,453	1,365,434	2,462,836
August	235,592	122,753	35,135	87,053	43,856	264,410	55,787	280,111	1,124,696	701,848	419,192	1,419,201	2,540,241
September	225,227	117,165	23,928	89,863	41,255	276,091	46,832	260,991	1,081,352	780,776	408,871	1,362,769	2,552,416
October	244,685	110,958	20,972	93,091	40,270	300,702	50,762	284,437	1,145,877	831,305	430,335	1,317,501	2,579,141
November	234,174	105,282	20,338	94,670	38,336	279,389	52,025	299,159	1,123,373	860,165	419,929	1,277,015	2,557,109
December	230,276	106,406	20,951	97,429	41,999	294,909	60,995	320,207	1,173,172	960,810	398,186	1,305,850	2,664,846
January, 1944	223,286	94,952	19,417	96,960	42,346	290,005	57,904	331,055	1,155,925	964,314	406,851	1,281,484	2,653,649

Employment—*Year-End Figures Match Up with Level of Last Spring*

Estimated Number of Employees in Non-Agricultural Establishments—In Thousands—Source: U. S. Bureau of Labor Statistics

ALL INDUSTRY DIVISIONS

	Montana	Idaho	Wyoming	Colorado	New Mexico	Arizona	Utah	Nevada	Total Mountain	Washington	Oregon	California	Total Pacific
January, 1943	110	105.0	57.0	288	80.3	111.7	182	43.8	978	638	339	2,611	3,588
February	110	106.3	57.8	278	79.5	112.6	174	45.0	965	634	341	2,642	3,617
March	110	101.9	58.6	281	78.6	112.2	173	48.3	964	646	348	2,663	3,657
April	110	104.3	59.0	282	78.9	114.1	171	47.1	966	648	349	2,685	3,682
May	111	106.6	60.5	280	78.3	118.9	173	47.4	976	643	351	2,694	3,688
June	112	101.3	61.4	285	79.1	116.2	173	47.3	974	655	361	2,726	3,742
July	112	100.4	61.0	284	81.8	112.4	180	44.8	976	673	362	2,734	3,769
August	113	98.4	61.9	287	83.2	108.7	178	41.9	972	665	361	2,776	3,802
September	115	102.0	62.1	290	80.7	107.6	175	44.0	976	675	362	2,717	3,754
October	114	101.4	62.1	288	79.8	109.2	172	42.1	969	667	350	2,702	3,719
November	114	100.5	62.1	282	79.0	111.0	168	43.1	960	666	344	2,691	3,701
December	114	98.8	61.6	279	79.0	111.0	165	41.7	950	666	345	2,696	3,707
MANUFACTURING													
January, 1943	15.1	11.8	3.7	66.5	4.4	12.7	30.8	1.7	147	259	145	1,002	1,406
February	14.5	11.9	3.7	64.2	4.5	12.8	30.6	2.0	144	255	145	1,022	1,422
March	14.3	11.8	3.7	63.4	4.5	12.6	30.5	4.2	145	257	147	1,036	1,440
April	14.2	12.2	3.7	63.9	4.4	12.5	31.2	4.5	147	256	147.2	1,052	1,455
May	14.2	13.4	3.7	64.0	4.2	13.8	30.8	4.9	149	255	148	1,050	1,453
June	14.4	14.0	3.8	65.0	4.5	13.1	33.7	5.5	154	263	153.7	1,061	1,478
July	14.5	15.2	3.9	67.0	4.7	13.5	40.4	5.2	164	274	157.3	1,080	1,511
August	15.2	14.2	3.9	67.0	4.6	13.4	36.9	5.0	160	271	157.9	1,142	1,571
September	15.2	15.8	3.9	68.5	4.3	13.2	35.8	5.1	162	279	161.3	1,088	1,528
October	15.9	15.7	4.3	69.2	4.3	13.6	36.4	4.8	164	278	150.8	1,066	1,495
November	15.8	14.9	4.5	65.0	4.9	16.5	32.1	5.0	159	277	146.6	1,052	1,476
December	15.0	14.3	4.0	58.6	4.9	16.5	28.2	4.7	146	273	145.0	1,034	1,452

Detailed figures from the California Division of Labor Statistics indicate specifically the trend in manufacturing employment shown in the above table for all the Western states. The total number of manufacturing wage earners in California decreased to 861,300 in January 1944 from 878,000 in December.

There was a loss in January of nearly 12,000 workers from durable goods plants, which include most of the war industries, making the total decline in the durable goods class from last August 33,500, principally in aircraft and shipbuilding, with men representing 98 per cent of the loss and women only 2 per cent. Despite record-breaking output, the total number of wage earners in shipbuilding and aircraft combined was lower in January 1944 than in any month since January 1943.

The number of women employed declined 6,300 in January from December in manufacturing industries as a whole, compared with a loss of 10,000 men in the same period.

Monthly figures for the California durable goods industries as a whole are as follows:

	San Francisco Bay Area	*Los Angeles Indus'l Area*	*Total State*
Jan. 1943	205,900	336,000	651,600
February	218,100	346,800	677,300
March	221,600	356,500	695,400
April	220,400	361,300	698,800
May	219,500	363,500	702,200
June	226,600	365,000	713,900
July	228,200	367,400	718,300
August	229,700	379,900	724,300
September	227,800	366,700	710,200
October	228,300	365,800	708,400
November	229,500	366,300	709,300
December	225,300	365,300	701,100
Jan. 1944	221,200	358,600	689,500

Pulp & Paper—*Less Tonnage*

Wood pulp and paper production on the Pacific Coast suffered slight declines in 1943 over 1942, just as in the country as a whole. Wood pulp output was 1,556,213 tons, a drop of 437,782 tons from 1942; paper and paperboard 1,309,828 tons, or 92,176 less than in 1942. Comparative figures are as follows:

PAPER AND PAPERBOARD

	1943	1942
Pacific States	1,309,828	1,401,964
Washington	598,704	665,402
Oregon	312,390	335,333
California	398,734	401,229

WOOD PULP

	1943	1942
Pacific States	1,556,213	1,993,995
Washington	1,153,177	1,572,841
Other Pacific States	403,036	421,154

SWPC—*Contracts Increase*

Smaller War Plants Corporation distribution of contracts is increasing, with the bulk of the business going to plants having less than 250 employees. For the month ending March 15, contracts awarded in northern California, Nevada, Idaho and eastern Oregon were 1,912 primes and 152 subs, for $7,142,750 respectively, totalling 2,064 contracts and $8,785,403, respectively. This is at the rate of two and a half million a week, compared to two million a week in the preceding month. Cumulative awards since July 1, 1943, total 6,247, for $47,322,861. In the last month 64.5 per cent of the jobs, representing $2,326,160, or 26.5 per cent of the money, went to firms having less than 50 employees, while 85 per cent of the jobs, representing 63.5 per cent of the total money, went to firms with less than 250 employees. By careful placing with plants having a little labor surplus within their ceiling, it has been possible to distribute these contracts in critical labor shortage areas.

Flour—*Grind Greater*

Although there were four fewer flour mills operating, the Far West produced a greater proportion of the nation's flour and mill feed in 1944 than in 1943. The grind was upwards of 60.7 million bushels of wheat in the states of the 12th Federal Reserve District against slightly more than 55.1 million in 1942. Flour production was about 13.5 million barrels as against about 12.4 million in 1942 and mill feed production reached approximately 500,000 tons as against a little more than 450 million in 1942. There were 91 operating mills reporting last year.

The district results by states show:

	Mills	Wheat ground (bu.)	Flour (sacks)	Millfeed (lbs.)
Washington	18	27,136	11,973	449,775
Oregon	17	15,054	6,649	242,931
California	10	9,810	4,351	165,783
Utah	19	6,090	2,725	97,266
Idaho	13	2,654	1,159	43,562
*District	87	60,744	26,857	999,317
Pct. U. S.	8.5%	11.4%	11.7%	11.0%

*Four Arizona mills not included.

Cement—*California Off*

Decline in California cement production is shown in Bureau of Mines figures. Cement mills in California worked at only 46 per cent of capacity in January, as against 81 per cent a year ago. Washington and Oregon operations were about normal for the time of year, however, with plants running at 51 per cent of capacity.

Bureau of Mines figures, in barrels, are as follows:

	California 1943	California 1944	Ore.-Wash. 1943	Ore.-Wash. 1944
Production	1,884,000	1,080,000	335,000	317,000
Shipment	1,567,000	1,082,000	265,000	299,000
Stocks	1,255,000	1,548,000	614,000	462,000

Freight—*Slight Gain*

Incoming freight from eastern railroads in February showed a gain of 16,919 cars over the same month last year, or 4.5 per cent, a much smaller increase than the 15.6 per cent for January 1944 over January 1943. Tonnage originating in the Pacific Northwest sharply increased in February showed a gain of 16,919 cars over the 20,762 cars, or 27 per cent.

Revenue freight tonnage for the Pacific Coast and intermountain districts through August 1943 is as follows:

	Originated	Terminated
TOTAL MOUNTAIN—1943		
January	4,044,347	2,599,319
February	3,679,932	3,196,349
March	4,173,486	3,612,960
April	3,765,372	3,337,481
May	3,597,431	3,359,456
June	3,447,523	3,208,633
July	3,916,510	3,361,982
August	4,444,915	3,495,803
TOTAL COAST		
January	5,780,494	6,562,550
February	5,390,673	6,116,474
March	6,203,700	7,626,997
April	6,265,215	7,730,334
May	6,923,575	7,928 765
June	7,189,202	8,311,493
July	6,974,833	8,176,564
August	7,397,671	8,350,699

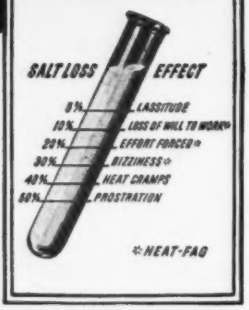
THE TREND

The deluge of surplus equipment and materials is growing, with the Army beginning to assemble huge quantities of stuff from air training fields in the West that are being closed down, the Maritime Commission setting up procedure for moving its unrequired supplies and the firms in the Aircraft Scheduling Unit reporting endless lists of items from nuts, bolts and screws on up. Released this early, the surplus may keep melting away as the war progresses, thus eliminating any mountainous post-war situation, and perhaps speeding up current production by making manufacturers less dependent on previous sources of supply.

WORKERS *Need Salt-*

Supply it- this easy, simple way for less than 1c a man per week

This Is What Happens When Sweating Robs the Body of Salt . . .



At hard work on a hot day, a worker can easily throw off several quarts of sweat — sweat that robs his body of vital salt.

Salt is a balance wheel in the human body. It keeps body fluids in equilibrium and gives tone to the blood. When salt is lost the body is dehydrated and the blood thickens. The result is Heat-Fag, lassitude, inalertness. Production suffers, accidents increase, absenteeism is common.

But loss of body fluids causes thirst. Excess water without salt under these conditions, dilutes body fluids and causes heat cramps.

The easy, simple, sanitary way to replace the salt lost through sweat is with Morton's Salt Tablets. It costs less than a cent a man per week to have Morton's Salt Tablets available at every drinking fountain.

Physicians with America's largest manufacturing plants have the figures to show that this cuts down Heat-Fag, heat cramps, heat prostrations. Production stays up. Accidents stay down.

QUICK DISSOLVING
(Less than 30 Seconds)

This is how a Morton Salt Tablet looks when magnified. See how soft and porous it is inside. When swallowed with a drink of water, it dissolves in less than 30 seconds.

Case of 9000, 10-grain salt tablets - - - - - - $2.60

Salt-Dextrose tablets, case of 9000 - - - - - $3.15

MORTON'S Heat-Fag SALT TABLETS

MORTON'S DISPENSERS

They deliver salt tablets, one at a time, quickly, cleanly—no waste. Sanitary, easily filled, durable.

800 Tablet size - - - $3.25

Order from your distributor or directly from this advertisement . . . Write for free folder.

MORTON SALT COMPANY, Chicago 4, Ill.

Steel Discussion In Congress

Jesse Jones, chairman of the Reconstruction Finance Corporation, the man who has most to say about disposal of war plants, is quoted as testifying before the House Committee on Banking and Currency as follows, regarding the steel situation in the West:

"We have to consider—what is in the interest of the whole economy of the country, postwar? Is it to the interest of the country to complete these plants and make steel in Utah and in Southern California and to make steel here and there and elsewhere, or should we leave it more or less where it is now? I think, as far as possible, without damage to any particular locality, if we should decentralize industry and get away from too much congestion, the country would be better off."

To which Rep. Patman of Texas added, "And that would save a lot in freight rates. I suspect in Utah it would enable the people out there to save $15 or $20 a ton on steel, just on freight rates alone."

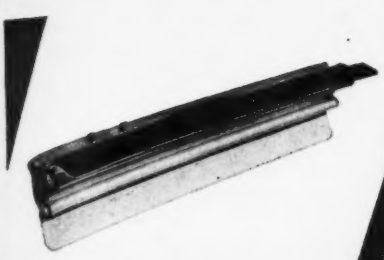
Store Window Recruiting

Five times more women workers were recruited in San Diego by Consolidated Vultee Aircraft Corporation through setting up miniature factories in downtown store windows than through a previous house-to-house canvass. Five of the large downtown stores cooperated, and actual production operations were carried on in the windows, with finished parts and assemblies kept flowing back to the regular work areas. Two stores also had employment booths inside, and Consolidated had station wagons ready to take applicants out to the plant hourly.

Industrial Research Lab

A western industrial research laboratory, to which could be submitted such problems as would promote industrial progress in the west, was the idea evolved at a meeting of the California Commission on Interstate Cooperation at Fresno March 10. Another proposal was the moving west of idle facilities elsewhere in the country that can be used in the war effort out here, such as, for example, a $30,000,000 government-owned brass plant.

• **"Lobster back" ship ventilators from Ray F. Backer Co., Portland, ready for delivery.**



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LABOR
AND THE INDUSTRIAL WEST

Production Bonus Plan

Potash Company of America, Carlsbad, New Mexico, placed a production bonus plan for its Carlsbad employees in operation on December 1, 1943. The plan provides that the output per overall manshift for the year ended June 30, 1943, shall be taken as a standard and any excess output above the standard will result in a bonus. The amount paid is representative of the entire increase in production. If production increases 10 per cent, the bonus paid is a full 10 per cent of each employee's pay. No individual standard is established; the only standard is the overall output of the entire employee group.

Participants in the bonus plan include all Carlsbad production employees except administrative officials, whether hourly pay employees, office workers, guards, foremen or superintendents. Approval covering installation of the plan was received from the War Labor Board and the Salary Stabilization Unit during December.

In the month of December, the first month of operation of the incentive plan, production per manshift was 6.46 per cent above the standard and each eligible employee received this percentage as an addition to his monthly check.

Paraffine Companies New Victory Program

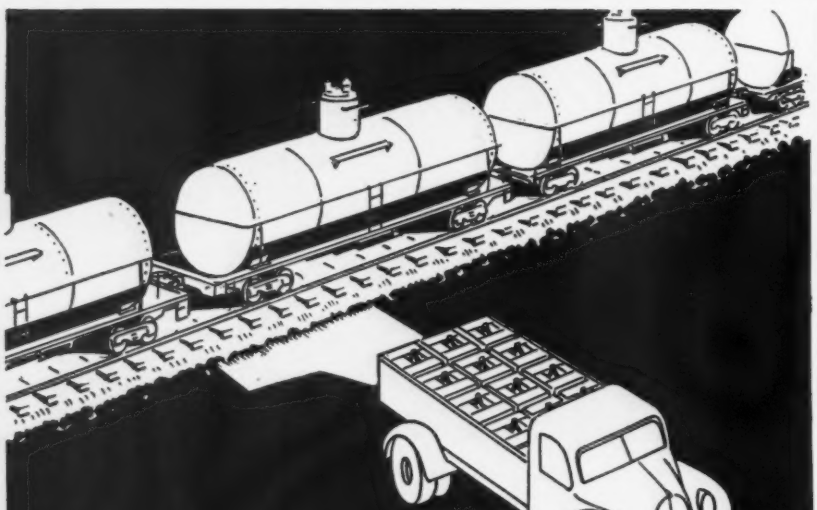
The Labor-Management Committee of The Paraffine Companies, Inc., have undertaken a six-month program for safer, greater and more efficient production. Each 30-day period in the six months will be devoted to one particular problem on which employees are invited to give suggestions. The problems to be discussed include: April, "Improving Product Quality"; May, "Safety and Accident Prevention"; June, "Cost Reduction or Time Saving"; July, "Absenteeism." During the 30-day period devoted to a problem, the ideas and suggestions developed by employees will be publicized immediately to the entire organization to stimulate further thought and contributions.

The Pabco Labor-Management Committee is also instituting a new system of exchanging ideas between the various departments of the factory. Suggestions operative in one department are brought to the attention of other departments by a check sheet to determine if similar improvements can be effected. The committee has devised a thorough system of "follow-through." Suggestions are routed to the Award Committee and awards are made within the drive period. Such quick action stimulates the employee. The type of suggestion and the value are publicized to all employees within the drive period.

Equal Pay For Equal Work

The NWLB has directed the Aluminum Company of America to establish rates at its Vernon plant in Los Angeles, California, on the basis of job content, irrespective of the sex of the worker. The Board directed that a present differential of 10c an hour between the minimum hiring in rates for men and women should be maintained except on jobs where women were hired to replace men or on jobs where men and women work interchangeably.

The Board's order stated that negotiations on this question should take into account any special training period which may be required for women and not for men, and provision made for an intermediate rate for such training periods. The number of women employees in the plant has increased from about 10 in January, 1941, to more than 600 at the present time.



To Insure Delivery, Order Early!

"Keep chemicals moving without delay into war production plants"—that's the job of the Stauffer Chemical Company today. Perhaps we may have to divide shipments in order to take care of all our customers and keep everybody happy—but we maintain the continual flow and our customers appreciate the dependable supply.

Many of our customers are cooperating with us during these hectic war days by placing their orders well in advance. This helps us both in planning deliveries.

Allocated chemicals, such as sulphuric and nitric acids, chlorinated hydrocarbon solvents, must be ordered by the 10th of the month preceding the month of required delivery. This same method may also help you on numerous other chemicals, critical at this time.

The Stauffer Chemical Company since 1885 has been a part of Western industry — has studied its chemical needs — and strives to serve the West efficiently.

LOS ANGELES Stauffer CHEMICALS SINCE 1885 SAN FRANCISCO

NORTH PORTLAND, OREGON

STAUFFER CHEMICAL CO.

More Wage Guides, Los Angeles Area

Below is an additional list of the highest approvable wartime wage rates for key jobs in the Los Angeles area, announced by the 10th RWLB.

All employers of more than eight persons are under the jurisdiction of the RWLB. In addition, the wages paid by employers of eight or less persons in shoe repair shops, tool and die shops, restaurants, hotels and hospitals come under the board's jurisdiction.

Paper Box Mfg. in Los Angeles Area

Classification	*Hourly Rate*
Die Maker (Die Setter)	1.10
Printing Pressman	1.08
Pressman—cutting	1.00
Scorer	.80
Feeder—Printing Press	.80
Feeder—Cutting Press	.70
Folder and Gluer Machine	.65
Bundler	.65
Wrapping Machine Operator	.65
Stripping Machine Operator	.60
Hand Box Maker	.60
Single Stayer Operator	.60
Hand Stripper	.60
Hand Folder and Gluer	.60

Aluminum Mfg. in Torrance, Calif.

Brick Mason	1.50
Common Labor	.75
Crane Operator—6 tons	.915
Furnace Operator	.90
Pot Man	.85
Truck Driver	.85
Battery Truck Driver	.85

Paint, Varnish & Lacquer Mfg. in L. A. Co.

Technician	1.21
Maintenance Man	.925
Varnish Maker	.90
Tinter	.90
Millman or Grinder	.875
Mixer, Thinner and Blender	.825
Filler	.80
Labeler and Packer	.65
Laborer	.75

Die Casting in Los Angeles

Die Casting Machine Operator	.90
Leaderman	(10c above Die Maker, Class A)
Die Maker, Class A	1.53

Furniture Mfg. in Los Angeles Area

Assembler	.90
Cabinet Maker	.94
Mill General Machine Operator	.915
Frame Maker	.94
Garnet Machine Operator	1.20
Roll Edge Operator	1.20
Detail Trim Saw Operator	1.09
Trim Saw Operator	1.01
Sticker Man	1.09
Double End Tennoner	1.09
Shaper	1.09
Hand Sander	.71
Machine Sander	.94
Clamp Man	.86
Trimmer and Legman	.90
Bandsaw Operator	1.09
Sprayman	1.01
Sprayman (undercoat)	.915
Packer	.82
Seamstress	.92
Cushion Maker	1.08
Outsider	1.08
Cutter	1.08
Mattress Filler	1.00
Helper and Floor Boy	.655
Mattress Maker	1.30
Box Spring Maker	1.20
Springer	1.14

Garment Mfg.* in Los Angeles Area

Designers	1.00
Sample Makers	.65
Forelady	.75
Pattern Graders and Markers	1.00
Inspectors	.50
Cutters	.95
Cutters Helpers	.60
Pressers	.55
Hand Finishers	.50
Operators	.60
Special Machine Operators	.60
Mechanic	1.125
Sorters	.55
Belt Boys	.55
Beginners (until operations learned)	.50

**Men's shirts and work clothes, cotton dresses and other cotton garments for women, etc. (Excludes the manufacture of knitted goods, men's clothing, ladies' silk wear and ladies' fancy sports wear.)*

It doesn't matter whether you're a president, a foreman, a clerk or a mechanic... whether you operate an office, a lathe or a truck. You are in the service of your country, for America today has but one industry—War; one product—Victory. It's a full-time job for every American, calling for the best efforts of every one of us, every day.

As war weapons, the tools and machines of industry are more precious than ever before. Your Citizen Soldier job is to keep them busy, use them with efficiency and skill, guard them against accidents, wear and breakdowns. Our task is the provision of fuels and lubricants to increase their efficiency and minimize wear. It imposes many new problems, including both increased production and development of new and better lubricants than have heretofore been known.

For Example, CADEL A. P.

A notable example of the latter is our new Cadel A. P. (all-purpose) Heavy Duty Lubricant. This is a remarkable detergent-dispersive-inhibited oil that lubricates both gasoline and diesel powered engines with equal efficiency. Carefully selected chemical additives cause Cadel A. P. to clean as it lubricates, prevent viscosity increase in service, protect all types of bearings from acid corrosion, and provide outstanding oiliness and film strength. Ask your Associated representative to give you the complete story of Cadel A. P., and how it can help you do your wartime job better.

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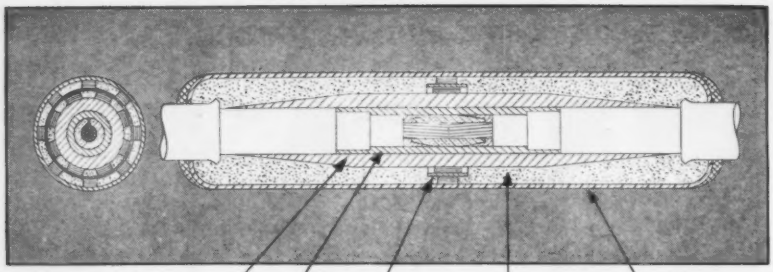
Cycol Industrial Lubricants • Associated Aviation Ethyl and
Flying A Gasolines • Fisk Tires • Aero Batteries



G-E FILLING COMPOUND 227

During four decades G-E Compound 227 has been recognized and used as a standard insulating filler for cable splicing and termination purposes. Its characteristics are well known — ease and smoothness of flow (65–75 deg. flow point and 165 deg. C pour point); high dielectric strength and moisture resistance; retention of semi-plastic consistency where poured; easy melt-out without injury to molded compound. It is also standard filler for cable end bells, coupler sockets, pot heads and similar applications. It is one in a complete line of G-E Insulating Materials. For catalog, consult your local G-E distributor or write to Section M443-100, Resin and Insulation Materials Division, General Electric Company, Schenectady, New York.

INSULATING AND SPLICING DATA AVAILABLE

Helpful information on the complete line of G-E Insulating Materials and detailed instructions on how to make cable joints are available on request from Section M443-100, Resin and Insulation Materials Division, Schenectady, New York. Please identify the publications yo want by the following numbers: 55–33–1 Insulation Materials; GEA-2987A Leaded Cable Joints; GEA-2988 Non-leaded Joints; and GEA-2989 Portable Cable Joints.

Hear the General Electric radio programs: "THE G-E ALL GIRL ORCHESTRA" Sunday 10 P.M. EWT. NBC. "THE WORLD TODAY" news every weekday 6:45 P.M. EWT, CBS.

BUY WAR BONDS

GENERAL ELECTRIC

Unions Named at Douglas

Douglas Aircraft employees are independent, if not consistent. Though the parent plant of Douglas at Santa Monica has gone non-union, two unions have been elected at the Long Beach plant as official bargaining agencies. The AFL International Brotherhood of Electrical Workers Local B-11 was designated to represent electrical, maintenance and construction departments, and the CIO United Automobile, Aircraft and Agricultural Implement Workers to represent the remaining hourly paid production and maintenance employees.

Safety Record At A.C.M. Plant

For the sixth consecutive year no accident in the Great Falls, Montana, plant of the Anaconda Copper Mining Company resulted in loss of life during 1943. Nine of the 28 departments in which more than 1,000 man-days were worked in 1943 had no lost-time injuries.

The plant regularly holds safety meetings to acquaint employees with the safety program and provide a means for receiving helpful suggestions.

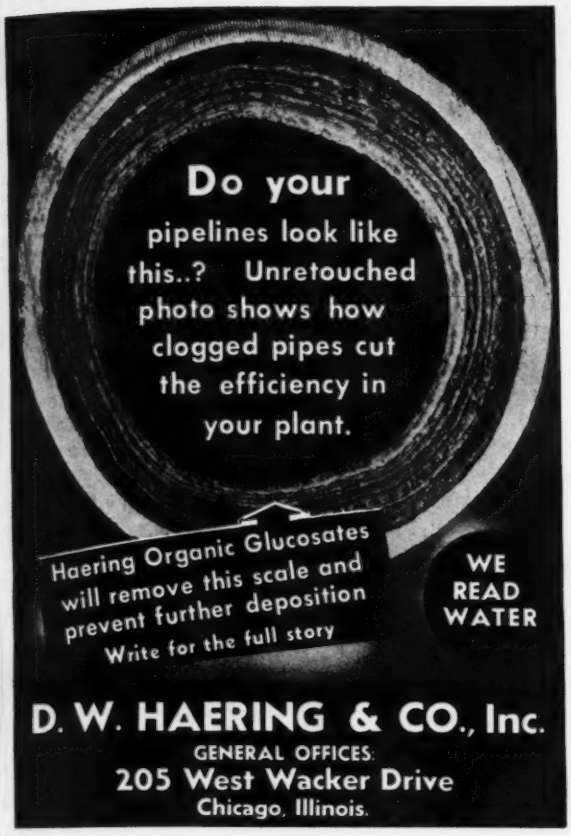
Individual Production Honor

Donald C. Mullet, Northrop Aircraft employee, was one of 14 war workers in the country who have received the WPB Citation of Individual Production Merit, highest honor awarded a civilian war worker, and comparable for the individual to the Army-Navy "E" awarded a plant. Mullet was invited to Washington by WPB to attend a nation-wide "production drive" conference and exposition hailing labor and management teamwork for war production.

Ordnance Workers In 1918 and 1943

Summary of a survey of ordnance workers in 1918 and 1943 shows changes in organization and policy but the same production problems existing in 1918 exist today also. In 1918 about 13 per cent of the workers were women as compared to almost one-third today. Employees, both men and women worked longer hours, the average work-week being 55 hours in 1918 and 47 hours in 1943. In 1918 the average pay for women was approximately only half that of men. In 1943 the women are being more nearly paid "equal pay for equal work."

The majority of the workers were on a 2-shift arrangement of 10 hours each. Today ordnance plants typically work three shifts of 8 hours. Nearly all the 1918 plants operated on the "open-shop" plan and organized collective bargaining was on a much smaller scale than it is at present. However, excessive labor turnover and inadequate housing were major problems in 1918 just as they are today.


Do your
pipelines look like this..? Unretouched photo shows how clogged pipes cut the efficiency in your plant.
Haering Organic Glucosates will remove this scale and prevent further deposition
Write for the full story
WE READ WATER

D. W. HAERING & CO., Inc.
GENERAL OFFICES:
205 West Wacker Drive
Chicago, Illinois.

KNOCK-OUT YOUR FLOOR PROBLEMS *with* PRE-MIXED • HEAVY DUTY ROCK-TRED

★ No matter how difficult your floor problems . . . no matter how unsuccessful other resurfacers have proved, we are confident Rock-Tred will put an end to your floor troubles—*forever*. Over long periods, Rock-Tred has proved its durability on floors of all types, trucking aisles, ship decks, loading platforms and other areas. Contains no sand or stone. Will not crack or crumble. Takes heaviest loads with ease. Will outlast the supporting sub-floor. Comes ready-mixed. Apply with a trowel. Sets quickly. Regular users read like the "blue book" of industry.

TESTING LABORATORY REPORT

Leading testing laboratory has endorsed Rock-Tred. Found it *spark-proof, load worthy, fire safe* and *non-skid*. Write for a copy of this convincing proof of Rock-Tred superiority . . . it's yours for the asking.

SPEED PATCH *for quick repairs!*
This fast-setting material allows busy plants to make their own floor repairs without interrupting regular operations. Simply fill broken area with spark-proof Speed Patch and tamp solid. *Truck over it immediately.* Comes ready mixed. Any handy man can make expert repairs. Order today.

REPRESENTATIVES IN PRINCIPAL CITIES

ROCK-TRED CORPORATION
605 W. WASHINGTON, CHICAGO 6, ILLINOIS

WARREN & BAILEY CO., 350 SOUTH ANDERSON STREET, LOS ANGELES
PETERSEN & COBBY CO., 363 CLEMENTINA STREET, SAN FRANCISCO

Colson

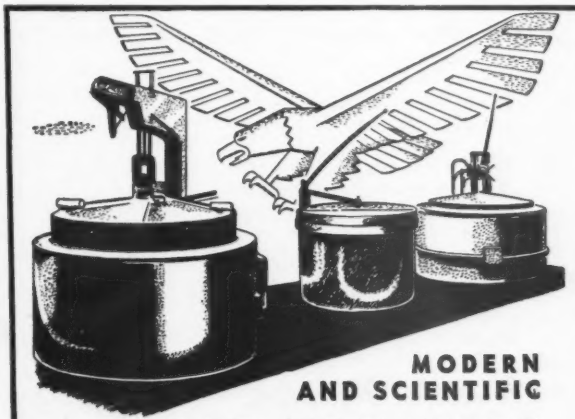
A Name to Look For in
CASTERS

Industry has used COLSON casters for more than 40 years . . . casters built to quality—not to price.

Today we are producing more casters than ever and they are available to industries essential to the war effort.

Tomorrow—when VICTORY comes—COLSON will be able to supply casters to all of our customers again.

COLSON EQUIPMENT & SUPPLY CO.
LOS ANGELES SAN FRANCISCO
Material Handling Equipment

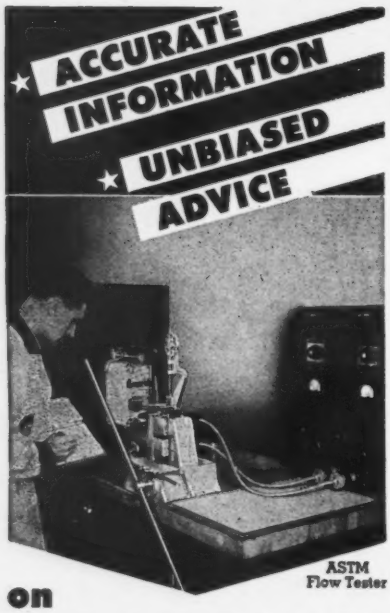


MODERN AND SCIENTIFIC
HEAT-TREATING

Maintaining the most modern equipment the Johnson Gear Company heat treats thousands of gears in the steady flow of war time production. This fine equipment is typical of facilities throughout our plant that have caused many of the West's leading manufacturers to select this organization as their prime source for gears.

"Serving Western Industries in the war effort with essential gears"

JOHNSON GEAR & MANUFACTURING CO., LTD.
MAIN OFFICE AND WORKS: BERKELEY, CALIFORNIA



ASTM Flow Tester

on

PLASTICS

Plastics Institute has neither materials nor products to sell . . . only service and facilities. The value of plastics depends on *proper application to the job.* We help you determine what plastics can do for you.

CONSULTING • Extensive information files and a widely experienced staff are at your service. Consult us on design, choice and use of plastics for your product.

RESEARCH • We have a well-equipped laboratory for raw material research, and facilities for making experimental models. Your plastics problems will receive expert analysis.

TESTING • Complete testing equipment available—chemical, physical, static and dynamic tests.

Consider Plastics

FOR . . . Industrial finishes . . . parts fabrication . . . new products . . . design improvement . . . production speed . . . cost reduction . . . SUPERIOR SERVICE.

Plastics

INDUSTRIES TECHNICAL INSTITUTE

176-W S. Alvarado, Dept. 4
LOS ANGELES

1220-W Chanin Bldg. Dept. 4
NEW YORK

626-W La Salle-Wacker Bldg. Dept. 4
CHICAGO

Supply Contracts Double

The number of firms in seven Western states holding government supply contracts more than doubled during 1943. This increase was at an even higher rate than for the nation as a whole, in which the number of public contracts was a little less than double the number for 1942. In the Western states 1406 government contracts had been awarded up to January 15, 1943, while on December 31, less than a year later, the number had jumped to 3,282, or a little less than 2½ times the number of contracts at the start of the year.

Plane Industry One of Safest

The aircraft industry is one of the safest for American workers. According to the Aircraft War Production Council, the accident frequency rate among plane workers in 1942 was only 11.4 per cent, compared to 33.1 per cent in shipbuilding, 40.7 per cent on structural steel fabrication, 17.4 per cent on railroad equipment manufacture.

Lockheed Aircraft Corporation has set a new safety record on the Pacific Coast in the Experimental and Central Mockup department where 1500 employees since June 2 have worked 1,275,000 consecutive man hours without a single lost-time injury.

Age Is No Respecter

That age is no respecter in a compensation case is proved by the filing of a claim by Amanda Sandifur on account of the death of her husband, Oliver B. Sandifur, who received an industrial injury while working as a messenger boy for the Western Union Telegraph Company at the age of 88 years.

Although death at such an age could have resulted from natural causes, the records indicate that he probably would be working as a messenger boy today if he had not been struck by a train.

USE *Mailway Banking*

AT THE OFFICE AND AT HOME

There is no such thing as "banking hours" with a Mailway account. You can open one by mail (checking or savings) and conduct it entirely by mail — right from your home or office to suit your own convenience. Our special Mailway envelopes and passbook make this service fast and safe.

Open a Mailway account by mail

CROCKER FIRST NATIONAL BANK
OF SAN FRANCISCO
California's Oldest National Bank

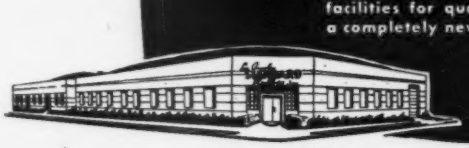
Member Federal Deposit Insurance Corporation
ONE MONTGOMERY STREET

LOS ANGELES STANDARD RUBBER, INC. CONTROLLED

Controlled Rubber

All Types of Extruded and Molded Rubber Products Manufactured to Your *Specifications.*

A wide variety of stocks available . . . facilities for quantity production in a completely new, modern plant.



Los Angeles
STANDARD
Rubber, Inc.

1500 EAST GAGE AVENUE • LOS ANGELES 1, CALIFORNIA

Compromise On Export Freight Rates

Military and other interested Government departments have accepted the compromise offer of the transcontinental railroads to apply commercial freight export rates on Government freight actually exported from Pacific ports in vessels of the War Shipping Administration, or the domestic rates with land-grant deductions on traffic lawfully entitled to land-grant deductions, whichever is lesser.

In addition, the railroads will allow the Government 60c a net ton for unloading and other terminal expenses at the ports.

Soaked for Upping Wages

Second highest penalty in the nation for raising wages in violation of the Wage Stabilization Act was imposed last month on Mayfair Companies of Beverly Hills, operating retail food establishments in several Los Angeles localities. The amount was $40,000, which will be disallowed as a deductible expense for income tax purposes.

Egg Dehydration

The west's largest egg dehydration plant is now in operation at Denver, employing 180 people and handling 45,000 dozen eggs a day, equivalent to an output of about 4,200,000 pounds of dried egg powder a year. It was established by Earle Carothers and J. H. Clark of Dallas, Texas, and is located at 1909 Blake Street.

When it's an
Engineering Problem
CALL . . .
ENGINEERING PRODUCTS CO.
PRospect 7044 — 1600 So. San Pedro St.
LOS ANGELES 15, CALIFORNIA

. . . . *Announcing*

A New Advertising Campaign Introducing Six Time and Money-Saving Products to Western Power Plant Engineers . . .

XZIT Fire Scale and Soot Eradicator
BRICKSEAL Refractory Coating
SERVIRON Interior Boiler and Tank Coat
PETROFLO Keeps Oil in Suspension and Prevents Sludging
"171" Boiler Metal Treatment
EUREKA For Circulating Water Systems

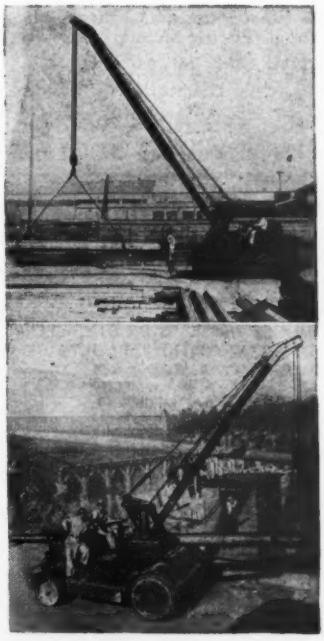
WATCH FOR FULL PAGE ADS BEGINNING IN THE NEXT ISSUE

SAVERITE ENGINEERING CO.
5800 SOUTH HOOVER ST.
LOS ANGELES 44, CALIF.
Dealers in Principal Cities

Where do you want that heavy bulky stuff moved?

Free-Roving Tractor-Footed
ROUSTABOUT CRANE

goes and moves it
quickly, at low cost



No expensive delays—Roustabout Crane picks up and moves your motor, machine, casting, crate, I-beam or whatever it is, big or small, easily, instantly. It keeps things to 5 tons moving around your factory, railroad, dock or airport. It's *where* you want it *when* you want it. On wheels or crawler tracks, it's easy to run, all tractor power, ball-bearing boom turntable, gears in oil, full boom swing—built for years of punishing work. Roustabout Crane is a highly profitable investment in post-war efficiency. Write now for the whole story.

THE HUGHES-KEENAN COMPANY
636 NEWMAN STREET • MANSFIELD, OHIO

ROUSTABOUT CRANE
Roustabout Cranes
By Hughes-Keenan
Load-Handling Specialists Since 1904

Stop FAUCET and VALVE LEAKS PERMANENTLY

with ECONOMY Renewable SEATS

Repair compression type faucets, bibbs, cocks and valves in a few minutes with long life (patented) ECONOMY Renewable SEATS. Permanent because these threaded seats are as replaceable as a washer. Accurately machined from solid brass these self-sealing seats end leaks, save heat and water, and save 97% brass.

MASTER KIT (illustrated) for Industrial Plants, Institutions, Plumbers and Steamfitters services faucets, bibbs, cocks and valves. Also special JUNIOR installation kit in fitted Metal Tool Box.

Under present maintenance conditions every industrial plant should have one of these Kits.

Prompt delivery on Priority Orders

Write for Catalog and Prices

Economy Seat Co.

2615 Fletcher St. Chicago, Ill.

LUBRICATION TROUBLES?
Try

MOTOR MICA

TRADE MARK REG. U. S. PAT. OFF

Anti-Friction Compound

Packed in 5-10-25-50-100 lb. containers

Here is a tried and proved product that will cool hot bearings . . . solve your toughest lubricating problems.

By simply mixing a little Motor Mica with your heavy oils or greases as directed, lubricating properties will be greatly increased. . . . Saves wear on bearings, gears and other moving parts.

Works Wonders with Cutting Oils

Added to cutting oils, Motor Mica saves tools and produces cleaner, smoother surfaces. Gives cleaner draws and reduces upkeep on dies for deep-drawing and punch press operations. A little goes a long way. America's largest industries use Motor Mica regularly.

QUICK SHIPMENTS
Write — Wire — Phone your Order today!

SCIENTIFIC LUBRICANTS CO.

3469 N. Clark St. Chicago 13, Ill.

OPPORTUNITY SECTION

This widely-read column can help you to sell your used machinery and other used equipment. For rates, write to the Opportunity Section, *Western Industry*, 503 Market Street, San Francisco, California.

LITTLEJOHN-REULAND CORPORATION
Los Angeles, California

Representing
Westinghouse Electric & Manufacturing Co.
INDUSTRIAL AGENTS
With stock of new electric motors and motor control for immediate delivery

★

LITTLEJOHN-REULAND CORPORATION
Rewinding 2655 Santa Fe Avenue Repairing
Jefferson 5255 Los Angeles, Calif. Jefferson 5255

A. S. LINDSTROM CO.
Representing
METZGAR CO.
Conveyors & End-Wood Wheels
Cable Reel Dollies
THE OHIO ELECTRIC & MFG. CO
Round and Rectangular Lifting Magnets
Torque Electric Motors
AUTOMATIC NUT CO., INC.
Anco Nuts and Structural Rib Bolts
866 Folsom Street · San Francisco
Los Angeles - Portland - Seattle

TRANSFORMERS
Used and Rebuilt

SINGLE PHASE, 50 OR 60 CYCLE—
2200 TO 110/220 VOLTS
3—1 K. V. A. Westinghouse
3—1½ K. V. A. Westinghouse
2—2 K. V. A. Westinghouse
4—3 K. V. A. Westinghouse
4—5 K. V. A. Westinghouse
3—10 K. V. A. General Electric

SINGLE PHASE, 50 OR 60 CYCLE—
2200 TO 440/220 VOLTS
1—7½ K. V. A. Westinghouse
3—10 K. V. A. General Electric

SINGLE PHASE, 50 OR 60 CYCLE—
440 TO 220/110 VOLTS
4—1½ K. V. A. Westinghouse
8—3 K. V. A. Westinghouse
2—5 K. V. A. Westinghouse
4—7½ K. V. A. Westinghouse
3—10 K. V. A. Westinghouse
1—150 K. V. A. General Electric

We Design - Build - Repair

JEFFRIES TRANSFORMER CO.
1710 E. 57th St., Los Angeles, Calif.

SALES REPRESENTATIVE—BEARING METALS
Liberal selling arrangement for West Coast Territories. Established dealers—full protection and cooperation. Manufacturers' agents selling kindred lines considered. For full particulars write Magnolia Metal Company, 18 W. Jersey Street, Elizabeth 4, N. J.

SHIPPING ROOM SUPPLIES

FACTORY EQUIPMENT

"MARKWELL" STAPLING DEVICES

FISHSTROM SALES CO.

SAN FRANCISCO
88 First Street GArfield 6694
OAKLAND
608 16th Street GLencourt 1174
LOS ANGELES
122 E. 7th Street VAndike 4446

Johnston

STAINLESS STEEL WELDING RODS

Los Angeles Distributor:
ANDERSON EQUIPMENT CO.
644 East Florence Ave.
Los Angeles 1, Calif.
Phone: PLeasant 26108

A.P. Johnston
1845 EAST 57th ST., LOS ANGELES, CALIF.
TELEPHONE KIMBALL 2508

WESTERN MARKETERS AND MARKETING

A monthly column devoted to the promotional and advertising plans of western manufacturers

Likelihood that there will be distinct improvement in the federal attitude towards advertising during the year 1944 is suggested in some recent reports from Washington. Not in the way of new policies but rather in clearer definition of those now in effect and an increasing willingness on the part of auditing and contracting officials to do the right thing by those in industry who have whole-heartedly backed up the war effort.

It is indicated however, that there will be a tendency to scan tax returns carefully to make sure that great increases in advertising were not made to avoid payment of income taxes. New instructions also have been sent out to field auditors for Army, Navy, and Lend-Lease to verify that publications used by war contractors properly belong to the industry of which the contractor is a part and are of direct benefit to the contractor in the type of work he is now doing for the government.

The Maritime Commission has recently adopted the identical policy on advertising costs used by the three agencies mentioned above, and the Price Adjustment Boards who handle renegotiation of contracts have issued a joint statement saying they would allow the same costs that are accepted by Internal Revenue as deductibles on income tax.

George C. McNutt, who became advertising manager for R. G. LeTourneau, Inc., before that firm moved from Stockton, California, to Peoria, Illinois, is receiving congratulations from his many "We knew him when" friends on the Pacific Coast. The occasion is the classification of LeTourneau as one of the four industrial firms in the country to receive the Associated Business Papers Award for the quality of its advertising.

New members of the *Dan B. Miner Co.,* Los Angeles, are Roy Dempsey and H. B. Clark. The former came from the McCarty Company, Los Angeles, the latter was formerly manager of copy and planning for the New York office of McCann-Erickson.

Cal Wood, formerly account executive with the Los Angeles office of West-Marquis, more lately manager of the agency's San Francisco office, resigns to join the staff of *Leon Livingston,* San Francisco.

New member of *The McCarty Co.* agency, Los Angeles, is Theodore Allen, one-time eastern representative for Curtis Publishing Co. Allen will function as account executive.

Dan Whelan, formerly with Garfield & Guild, later with the Spencer Curtiss Agency, is now connected with *Wank & Wank,* San Francisco, as account executive.

The Amsco Airplane Mfg. & Supply Corp., North Hollywood, announces addition of Bruce Altman to its publicity and advertising department.

Direction of the advertising activities of *The Empire Construction Co.,* San Francisco, will hereafter be in the hands of *Brisacher, Van Norden & Staff,* same city.

Downs Crane & Hoist Co. advertising is now handled by *Steller Millar Advertising Agency,* Los Angeles. O. .A. Steller is the account executive.

Anticipating the increasing importance of foreign markets, *Hixson-O'Donnell, Los Angeles,* opens a new foreign trade division of the agency with Raul Rodriguez, formerly industrial trade paper editor, in charge.

PUNCH-LOK

• • • • • the Easiest, Fastest, Most Dependable and Economical Method for SOLVING HOSE CLAMPING PROBLEMS

The PUNCH-LOK Hose Clamp is a mechanical device for clamping fittings, menders, or ordinary pipe to a hose. A broad, flat, high tensile strength galvanized steel band is double-wrapped around the joint. After tensioning with a pull of 1000 pounds within the LOKING-TOOL, the ends are securely locked together under tension *without loss* of tension. The excess band is then cut off flush with the Lok so that the entire joint is streamlined for safety.

Once the PUNCH-LOK Hose Clamp has been locked, vibration or rough handling cannot loosen it. There is no possibility of injuring or cutting the hose in any way—the clamp will outwear the hose—and the cost is no more than the ordinary clamp of yesterday. Stop your hose leaks and troubles with PUNCH-LOK.

15 SECONDS TIME STOPS COSTLY LEAK LOSS.

Write today to Department B for illustrated folder or contact Harry M. Thomas, Pacific Coast Representative, 1554 Oakland Avenue, Piedmont 11, California, for the name of your nearest distributor.

• THE BAND Double-Wrapped

• THE TOOL Heat-Treated

• THE JOINT Punch-Loked

PUNCH-LOK COMPANY
321 N. Justine St. Chicago, Illinois
DISTRIBUTORS IN PRINCIPAL WESTERN CITIES

HOOKS THAT REALLY TAKE *Care* OF THE LOAD

HORIZONTAL PLATE HOOKS may be used in sets of either two or four. Will handle one or more plates at each lift. They are time and labor savers for fast loading or unloading when plates are to be stacked in the flat position.

DOWNS RAIL TONGS built for safe and economical handling of railroad rails of all sizes and weights. Two-ton capacity with jaw openings of 3" for rails up to 100 lbs. ASCE. Three-ton capacity with jaw openings of 4½" for the heaviest rails.

SAFETY PLATE GRIPS with either rigid or loose guide loops will hold with a positive grip in all positions. Used for handling vertical plates, they are also safe for upending or turning over horizontal plates or assemblies. Write for illustrated catalog.

DOWNS CRANE & HOIST CO.
MECHANICAL ENGINEERS
540 W. Vernon Ave., Los Angeles 37, Calif.

THE WEST ON ITS WAY

ARIZONA

BUILDINGS—E. W. Duhame, 3719 N. Central Ave., Phoenix, has been awarded contract by U. S. District Engineer Office, Los Angeles, for construction of buildings and facilities at Kingman, Ariz.

ICE PLANT MACHINERY—Pacific Refrigeration Company, 1040 Venice Blvd., Los Angeles, has been awarded contract by U. S. Dist. Engineer Office, Los Angeles, for furnishing and installing ice plant machinery and insulation at Kingman, Arizona.

BUILDING ALTERATION—James B. Donaldson, Heard Bldg., Phoenix, has been awarded contract by U. S. Dist. Engineer Area Office, Phoenix, for alteration of production line maintenance building at AAF advanced flying school, Douglas, Ariz.

CALIFORNIA

BUILDING—Stolte, Inc. 8451 San Leandro Street, Oakland, has been awarded $449,000 contract by Navy Department for construction of administration building annex, at Camp Parks, Shoemaker, Calif.

FERRY SLIP—Mercer-Fraser Co., 83 McAllister Street, San Francisco, has been awarded $140,838 contract by Navy Department for alterations to ferry slip at Treasure Island, Calif.

FOUNDATION—J. O. Oltmans & Son, 810 E. 18th Street, Los Angeles, have been awarded contract for construction of a combined foundation for two Banbury mixers and two mills at the U. S. Rubber Company plant, East Los Angeles.

BAKERY ADDITION—Jack Hendricks, 5203 Mount Royal, Los Angeles, has the contract for construction of additions to a bakery building at 1601 W. 14th Street, Long Beach, for Interstate Bakeries Corp., to cost $25,000.

BUILDING—Haddock Engineers, Ltd., 605 W. Olympic Blvd., Los Angeles, has been awarded contract by U. S. Navy for construction of building at Camp Pendleton, Calif.

SAWMILL—The Meadow Valley Lumber Company has purchased th Mt. Hough Lumber Co. sawmill in American Valley, two miles ea of Quincy, Calif.

TOOL AND ELECTRIC SHOP—MacIsaac & Menke, 3440 E. 22 Street, Los Angeles, have been awarded contract for construction of a extension to the tool and electric shop building, No. 3-C at Wilmin ton, Calif., for Consolidated Steel Corporation, Shipbuilding divisio

HANGAR BUILDINGS—Ford J. Twaits Company, Los Angeles, ha been awarded contract by Lockheed Aircraft Corp., Burbank, for con struction of two hangar buildings at the Navy Plane Service Center Van Nuys, Calif., to cost $772,570.

WAREHOUSE BUILDINGS—Kemp Bros., 2900 Hyde Park Blvd. Los Angeles, have been awarded $172,400 contract by U. S. Navy fo construction of two frame warehouse buildings and appurtenant work at the Naval Supply Depot, San Diego, Calif.

FACTORY BUILDING—Kinmont Manufacturing Company, Hunting ton Park, is building $125,000 factory on East Slauson Avenue, Los Angeles, Calif.

WAREHOUSE—California Conserving Company is preparing plans for a two-story warehouse at Oakdale, California, to cost $500,000.

INCINERATOR PLANT—Oakland Scavenger Company, 2601 Peralta Street, Oakland, is rebuilding its burned incinerator plant at a cost of about $150,000, San Leandro, Calif.

PACKING HOUSE—Calavo Growers of California, 4803 Everett Ave. addition to two story, basement, packing house and office, to cos $75,776, Vernon, Calif.

RESTAURANT—Wm. Simpson Construction Co., 816 W. Fifth Street Los Angeles, has been awarded $52,577 contract by U. S. Navy for con struction of a civilian restaurant building at the Naval Air Station Reeves Field, Terminal Island, Calif.

BUILDING ADDITION—The Austin Company, 777 E. Washington Blvd., Los Angeles, has been awarded $100,000 contract to construct addition to building at 5701 Imperial Highway, for North American Aviation, Inc., Los Angeles.

Clevelands help to produce it—without a flaw

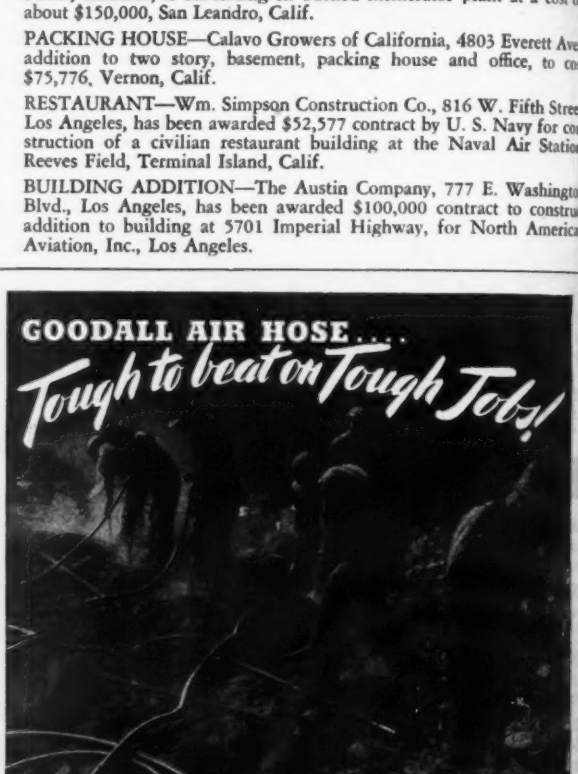
The machines must operate with uniform angular velocity. Even the slightest variation in speed will form a streak or ridge. Drives of another type failing to meet this requirement caused a high percentage of scrap.

The manufacturer has used Clevelands successfully on other applications for more than 20 years—so he installed them on this equipment too. Clevelands smoothed out the operation—quickly eliminating defective production.

You can depend on Cleveland Worm Gear Speed Reducers. Send for the Cleveland Representative—specify Clevelands for your new equipment.

THE CLEVELAND WORM & GEAR COMPANY
3269 East 80th Street • Cleveland 4, Ohio
San Francisco Los Angeles Portland Seattle
Affiliate: The Farval Corporation, Centralized Systems of Lubrication

CLEVELAND WORM GEAR Speed Reducers



INDUSTRIAL RUBBER PRODUCTS
Hose — Belting — Packings
Rubber Clothing — Boots — Specialties

GOODALL RUBBER COMPANY
(CALIFORNIA)
LOS ANGELES 510-514 E. 4th St. Michigan 2207
SAN FRANCISCO 678-A Howard St. Sutter 7944
SALT LAKE CITY 251 W. South Temple St. Phone 3-8021
SEATTLE 524 First Ave. So. Elliott 7043
Mills—Trenton, N. J., established 1870

ASSEMBLY BUILDING—Vega Aircraft Corp., 2555 Hollywood Way, Burbank, Calif., has let contract to McNeill Construction Co., 5860 Avalon Blvd., for construction of an assembly building to cost about $120,000.

MACHINE WORKS—Holland Welding and Machine Works, Sacramento, has been purchased by the U. S. Machinery Company, Sacramento, Calif.

SHIPS—Consolidated Steel Corporation, Ltd., Wilmington, California, has been awarded contract by the Maritime Commission for construction of 18 cargo vessels of about 5,000 deadweight tons.

STORAGE, REPAIR, ETC.—Benicia Arsenal, Calif., is to have additional facilities for storage, repair and miscellaneous operational uses, to cost about $600,000.

PUMPING STATION—Oil Field Construction Company, 2650 Cherry Ave., Long Beach, has been awarded contract by the Texas Company, 929 S. Broadway, Los Angeles, for construction of a pumping station at Paloma, Calif.

AUTOMATIC PARTS—Thee & Anderson Automatic Parts Mfg. Co. has been formed by Frank C. Thee and E. Lester Anderson, to conduct business at 422 East Whittier Blvd., Pico, Calif.

HEAT CONTROL—Rheem Mfg. Co. has announced arrangement with Domestic Control, Inc., of Los Angeles, whereby Rheem will begin manufacture of heat controls at its Stockton plant.

AUTO PARTS—Remanufacturing Division plant of the Automotive Service Company has been opened at 321 North First Street, San Jose, Calif.

FACTORY FACILITIES—The Electron Equipment Corporation, formerly of Palm Springs, has leased enlarged factory facilities at 917 Meridian Avenue, South Pasadena, Calif.

SHOP ADDITION—Barrett & Hilp, 918 Harrison Street, San Francisco, have been awarded contract by the Western Pacific Railroad Company, San Francisco, for construction of a shop addition at Oakland yard.

CAFETERIA ADDITION—The H. J. Kaiser Co., care of Facilities Engineering Office, Yard No. 4, Richmond, is preparing working drawings for construction of a frame cafeteria building addition for the Richmond Yard No. 3.

LUMBER—Belyea Trucking Company, 6800 S. Alameda Street, Los Angeles, has been awarded $111,950.75 contract by U. S. Engineer Office, for operation of Walerga Lumber Yard in Sacramento County, Calif.

PLANT—Leonard Const. Co., 37 S. Wabash, Chicago, Ill., has been awarded contract for construction of a large sulphuric acid manufacturing plant at 20720 S. Wilmington Ave., Dominguez Station, for the Stauffer Chemical Company, 555 S. Flower Street, Los Angeles, Calif. The plans involve construction of three buildings, an office building, blower building and tool house and warehouse.

COLORADO

BUILDINGS—Bridges and Welcer, Portland, Oregon, have been awarded $424,500 contract by U. S. Veterans' Administration for construction of buildings at Fort Lyon, Colorado.

BUILDING—Carlson Construction Company, Denver, has been awarded contract by U. S. Dist. Engineer Office, Denver, for construction of a building at Pueblo, Colo.

BUILDINGS—Mead & Mount Const. Co., Denver, have been awarded contract by Kassler Mortgage Co., Denver, for construction of two buildings in Colorado Springs, Colorado, to cost about $100,000.

IMPROVEMENTS—The Denver & Rio Grande Western Railroad Company, Denver, has budgeted $3,817,083, which has been approved by the Federal District Court, Denver, for improvements and new facilities for their system in Colorado and Utah.

RAILROAD TUNNEL—Winston Bros. Co., 411 W. 5th Street, Los Angeles, have been awarded contract for $674,730 by Denver and Rio Grande Western Railroad Co., Denver, for construction of railroad tunnel through the Continental Divide under Tennessee Pass, to be about 2000 feet in length.

IDAHO

PHOSPHATE PLANT—Construction of the million-dollar Pocatello phosphate plant planned by J. R. Simplot to be built west of Pocatello, has been reported to have government approval and should be ready to begin processing by September.

SHOP—The Bureau of Yards and Docks, Navy Department, has approved construction of a maintenance shop and equipment storage center on the Naval proving range, near Arco, Idaho, to cost about $46,000.

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V-BELT FASTENERS

● Alligator V-belt Fasteners and the open-end V-belting now being made by belting manufacturers, will enable you to make up multiple V-belt drives from roll belting. These fasteners have been on the market 9 years and are now being used on a wide variety of drives.

Available for B, C, D sizes of belt for industrial use and 1-in. and 2-in. sizes for railroad use. These fasteners, however, should not be used for repairing endless cord V-belts.

Bulletin V-205 will give you complete details as to where and how these fasteners are used, sizes, list prices, tools and application instructions. A copy will be mailed at your request.

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Also sole manufacturers of Alligator Steel Belt Lacing for flat transmission belts and Flexco HD Belt Fasteners and Rip Plates for fastening and repairing conveyor belts.

THE WEST ON ITS WAY

MONTANA

LUMBER—Grogan-Robinson Lumber Company, Great Falls, has pu chased capital stock of the Missouri River Lumber Company, therel adding three yards to their present ten.

NEVADA

WAREHOUSE—McCoy & Butler, 1128 F Street, Marysville, ha been awarded contract by U. S. Engineer Office for construction o warehouse at the Reno Airfield, Reno, Nevada.

COLD STORAGE BUILDINGS—The U. S. Navy, Washington, D. C., has authorized construction of cold storage buildings at the Navy ammunition depot at Hawthorne, Nevada, to cost about $680,000.

BUILDINGS—M. A. Imhoff & Associates, 1748 New Avenue, San Gabriel, have been awarded contract by U. S. District Engineer Office, Los Angeles, for construction of station expansion and radio range buildings at Indian Springs Army Airfield, Indian Springs, Nevada, to cost $194,659.90.

NEW MEXICO

PLANT—C. C. Moore & Co., 450 Mission Street, San Francisco, has been awarded contract by the United States Potash Company, for construction of improvements to plant at Carlsbad, New Mexico, to cost more than $1,000,000.

PLANT FACILITIES—International Minerals & Chemical Corp., 20 N. Wacker Drive, Chicago, is reported considering construction of additional plant facilities at Carlsbad, N. M., to cost about $175,000 and to be financed by the Defense Plant Corp.

OREGON

EQUIPMENT—Defense Plant Corp., has authorized $70,000 increase in contract of Pacific Chain & Mfg. Co., Portland, for additional equipment, making overall commitment $355,000.

PLANT—It is reported that American Can Company of Seattle plans a post war plant costing about $1,000,000 at Salem, Oregon.

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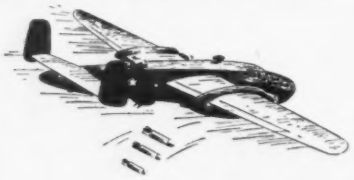
PORTLAND CORDAGE
CLOVER LEAF MANILA
COMPANY



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KARL MOELLENDICK
7813 California Ave., Huntington Park, Calif.

GEORGE HUNDSDORFER
1424 11th Avenue, Seattle, Washington

PLANT FACILITIES—Willamette Iron & Steel Corp., Portland, has been authorized $175,000 by Defense Plant Corp., to provide additional plant facilities, making total commitment of more than $1,870,000.

LABORATORY—The Western Pine Association, Yeon Building, Portland, has announced that it plans to construct a wood-rendering laboratory at Bend, Oregon, to determine what materials can be derived from pine grown in the Pacific Northwest.

OUTSIDE FACILITIES—Empire Construction Company, 234 N. E. 28th, Portland, has been awarded $248,500 contract by U. S. Navy, for construction of outside facilities at U. S. Naval Station, Astoria, Ore.

LAUNDRY FACILITIES—L. H. Hoffman, Route 5, Box 801, Portland, has been awarded $73,491 contract by U. S. Navy for construction of laundry facilities at the Astoria Naval Station, Astoria, Ore.

BUILDINGS—L. H. Hoffman, 715 S. W. Columbia, Portland, has been awarded $1,193,000 contract by Navy Department for construction of buildings at U. S. Naval Station, Astoria, Ore.

UTAH

PLATFORM—Reynolds Const. Co., Springville, Utah, has been awarded $42,051.75 contract by U. S. District Engineer for construction of loading platform, etc., at Ogden Arsenal, Utah.

REMODELING BUILDING—J. H. Angel, 1267 W. 4th S., Salt Lake City, has been awarded contract for remodeling building at Main and 1st West Streets, American Fork, Utah.

EXPANSION—The Bureau of Yards & Docks, Navy Dept., Washington, D. C., has approved a $995,000 expansion program for the Naval Supply Depot, Clearfield, Utah.

PROCESSING PLANT—Plans are being prepared for construction of a main factory building, two warehouses, a winery, and an office building, for fruit and vegetable processing plant at Perry, Utah, for Bear River Packing Company, Ogden, Utah.

WASHINGTON

ELEVATOR—It is reported a bulk pea elevator, to cost about $15,000 will be constructed by R. H. Sutherland, at Colfax, Wash.

SHIPS—Kaiser Company, Inc., Vancouver, has been awarded contract for 60 cargo vessels by the Maritime Commission.

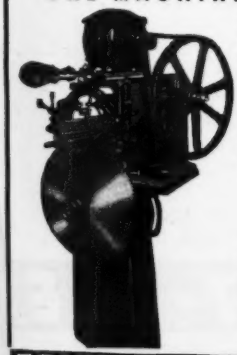
DOUBLE

the Cutting Life of Your Saws!

Why do saws break out teeth, crack, or lose their temper? Nine times out of ten because they are used when too dull or imperfectly filed. They get too hot,—and the trouble starts.

The Foley *Automatic* Saw Filer files saws so much faster you can always work with sharp saws, which not only prolongs saw life but increases power saw output from 25% to 40%. Saws are *automatically* jointed as filed, keeping all teeth even in size, shape, spacing. Foley-filed saws run so smooth, true and cool that breakage is practically eliminated. If your saws are hand-filed,—investigate!

ONE MACHINE FILES ALL SAWS



The Foley Automatic Saw Filer is the ONLY machine that files cross-cut circular saws 3" to 24" in diameter, band saws up to 4½" wide,—all hand saws. Simple attachments come with the machine for each type of saw. A Foley Automatic Saw Filer can be purchased under a CMP-5 MRO. Prompt delivery can be made.

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Please send literature on the Foley Automatic Saw Filer and details of your 30-Day Trial.

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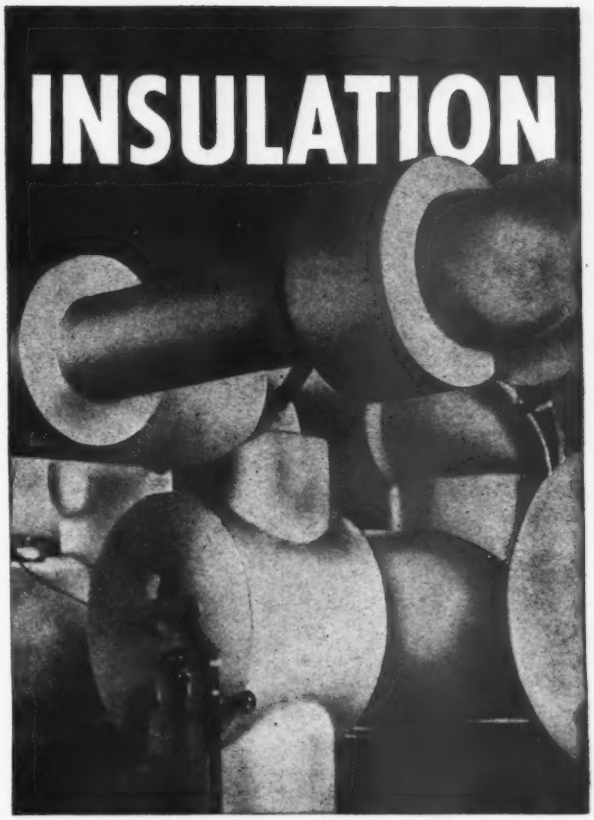

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for piping, boilers, industrial equipment and refrigeration

Because, for any specific service, there is one type and form of insulation that will serve better, more economically, than any other, we maintain a local stock of the complete line of Johns-Manville insulating materials. These quality materials installed by our competent and experienced workmen enable us to offer an insulation service to fit every industrial need.

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Two months *before* Pearl Harbor, we were in full swing on war production. Our products now go to shipyards from Coast to Coast.

Specialized experience, trained personnel and rigid standards of quality enabled us to switch quickly from peace-time production to quality war-time production.

When peace returns, it will not be difficult for us to resume production on your cast steel requirements.

In making *your* plans for post-war product improvement, select the product of a foundry whose personnel has a consistent record for quality production.

**Not just steel, but a standard of quality.*

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THE WEST ON ITS WAY

PLANT FACILITIES—Defense Plant Corp. has announced an increase in its contract with Boeing Airplane Company, Seattle, to provide additional plant facilities in Renton at a cost of about $2,500,000, making an over-all commitment of about $21,700,000.

STOREHOUSE—The U. S. Navy Dept., Washington, D. C., has approved the construction of storehouse at the Naval Air Station, Pasco Washington.

PAINT SHOP AND STORAGE BUILDING—The U. S. Navy Department, Washington, D. C., has approved $75,000 for construction of paint shop and plant facilities in the state of Washington.

BUILDINGS, ETC.—Hendrik Valle Co., Seattle, has been awarded $296,964 contract by Navy Department for construction of personnel and security buildings and fuel storage facilities at the Naval Station, Manchester, Wash.

REPAIR SHOP—William Boede and J. M. Robinson have equipped a new machine shop plant to specialize in repairing fishing fleet units at Aberdeen, Washington.

BUILDING—Rainier Const. Co., 612 American Building, Seattle, has been awarded $36,473 contract by U. S. District Engineer Office, Seattle, for construction of a building at Fort Lawton, Wash.

FACTORY BUILDING — The Northwest Cooperative, Ellensburg, Washington, has started work on the construction of a potato starch plant at Ellensburg, to cost about $80,000.

STEAM PLANT—Wenzler & Ward, Textile Tower, Seattle, have been awarded contract by Seattle Dist. Engineer, for construction of steam plant at Seattle, Wash.

STEEL TUGS—Reliable Welding Works, Olympia, Washington, has been awarded contract by the U. S. Maritime Commission for construction of six steel tugs for the Army.

WYOMING

OIL—The Carter Oil Company, subsidiary of Standard Oil of New Jersey, has purchased 900 barrel daily crude oil production in the Elk basin field of Wyoming, and three refineries with a total daily capacity of 12,000 barrels.

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Now you can restore broken concrete to solid smoothness without having to close off the area. Use durable INSTANT-USE . . . a tough, plastic material which you simply shovel into hole—tamp—and run traffic over immediately. NO WAITING. Bonds tight to old concrete. Makes smooth, solid, heavy-duty patch. Withstands extreme loads. Keep a drum on hand for emergencies. Immediate shipment.

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Not all synthetic gloves are oil resistant!

Hands in Danger are Safe in **Stanzoils**

Safety is cheapest — keep your busy factory "hands" safely at work, avoid lost production, costly injury claims. Stanzoils, the popular neoprene glove resists damage by oils, acids, caustics, last 3 to 7 times longer than rubber. Prevent skin irritation — workers like them. Standard styles, black, white. Write for current delivery data.

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★ **FOR ALL TYPES OF BRONZE ARC WELDING, USED EXTENSIVELY BY:** Railroads, Refineries, Shipyards, Chemical Industries, Utilities, Welderies and Manufacturing Plants, for fabricating or building up worn bronze propellers, condenser tubes, valves, etc. Welding tool steel, bronze or copper fittings, supports, etc. to steel. Recommended for applying an overlay on steel to provide a non-seizing surface.

YOU'LL FIND THAT YELLOW SHIELDED EDCO CENTER GRIP GIVES YOU MORE WELD PER POUND, LESS WASTE PER STICK AND GREATER CONTROL

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COMPAS — PRECISION QUALITY SERVICE EFFICIENCY

WESTERN TRADE WINDS

NEWS ABOUT THOSE WHO DISTRIBUTE AND SELL INDUSTRIAL EQUIPMENT AND MATERIALS

E. B. Scott has been appointed sales manager of the engine division of the Enterprise Engine & Foundry Co. Prior to his promotion, Scott was manager of the repair and maintenance division, and assistant to **C. G. Cox**, vice president of the California concern.

Because they learned to work together in the making of war parts and assemblies, the heads of several large Southern California firms have banded together to buy out the business of the Hercules Foundries of Los Angeles, manufacturers of plumbing supplies and soil pipe fittings for the Pacific Coast. The war plant executives are: Lawrence A. Harvey, chairman of the board, Harvey Machine, Inc.; Alex Deutch, president of American Screw Corporation, and Louis Warschaw, president of Warmac Company. Associated with them is Victor Harperin, who will be in charge of consumer sales and research.

California Goggle Company, who have been appointed representatives of the Watchemocket Safety Goggle Company, Rhode Island, are located at 1651 Cosmo Street, Hollywood 28. Kenneth Trask is in charge.

The Rock-Tred Corporation of Chicago has recently appointed the **Warren & Bailey Company**, 350 South Anderson Street, Los Angeles, as Southern California distributors of Rock-Tred products. **The Petersen & Cobby Company**, 363 Clementina Street, San Francisco, has been appointed Northern California distributors. West Coast industrial activity has grown to such proportions that L. L. Crane, Rock-Tred specialist, has been transferred from the Chicago office, establishing headquarters in San Francisco, to assist the new distributors.

The Snyder Engineering Corporation, 2444 East 24th St., Los Angeles 11, has been appointed by The Louden Machinery Company as its representative for overhead materials handling systems in Southern California and Arizona. The Snyder Engineering Corporation also represents Cleveland Worm & Gear Company, The Farval Corporation, Jeffrey Manufacturing Company and W. W. Sly Manufacturing Company.

The Galigher Company, Salt Lake City, has been appointed representative in that area for A. P. Johnston Stainless Steel Welding Rods, Los Angeles. Anderson Equipment Company represents the firm in Los Angeles and J. E. Haseltine and Company in Portland and Seattle.

N. B. Dinkel of Alameda, California, is to represent the Crosley Corporation in the Pacific Coast area.

Plastitool Engineering Company now occupies a larger plant at 5835 West Washington Blvd., Culver City. William C. Lockwood is general manager and Larry Meyer is plant manager.

The Electron Equipment Corporation, formerly of Palm Springs, Calif., a pioneer in industrial electronics since 1926, has leased enlarged factory facilities at 917 Meridian Ave., South Pasadena, where they will engage in an expanded production of technical electric industrial equipment consisting of electronic motor controls from ¼ to 250 horsepower, electronic rectifiers, converters, inverters, cycle chargers, heavy duty battery chargers and voltage controls. D. B. Clark is president and chief engineer, and Harrison Matthews is vice president and general manager of the company.

B. K. Wickstrum has been appointed Pacific Coast sales manager for its lighting products by Sylvania Electric Products, Inc. Offices will be maintained at 555 South Flower Street, Los Angeles. Wickstrum will have two assistants, **C. W. Dickinson**, manager of the Northwest division with headquarters in Seattle, and **G. W. Feld**, manager of the California division, which includes Nevada.

LeRoy Wagner, Pacific Coast representative of the Miller Rubber Sundries Division of the B. F. Goodrich Company, was presented his 40-year service pin by the company at a recent sundries sales representatives conference. Wagner travels all the territory from Denver west, and has held his present post for more than 25 years.

Bryn M. Williams has joined the staff of the Moore Machinery Company in Southern California, having resigned as chief of the machine and small tool section of the Los Angeles Regional Office of the Ordnance Department.

North American business of Casa **TAXCO**, exporters and importers in Caracas, Venezuela, is under the management of **Eugenio Dubois**, 850 Bendix Bldg., Los Angeles. Associated with him is **Sergio Oritz Toro**, an American mechanical engineer. The firm handles a broad list of imports from the United States, including plastic ware, crockery, thermos jugs, kerosene lamps and stoves, sporting goods, camping outfits, twine and cordage, canvas and canvas covers, small machine tools, toys, industrial machinery and equipment.

American Electric Construction Company of San Francisco, of which George A. Meyer is president, have moved into their new building at 955 Howard Street, increasing their quarters to about eight times the size of their previous location.

Philip H. Clapp has been appointed Pacific Coast district manager for the Abrasive Division, Norton Company, Worcester, Mass., with headquarters in Los Angeles.

H. M. Comstock has been named engineering sales representative in southern California for Kropp Forge Company, Chicago, and Kropp Forge Aviation Company.

Kennametal Inc., of Latrobe, Penn., manufacturers of cemented carbide cutting tools, blanks and specialties, have opened a branch office at 378 Fifth Street, San Francisco 7, for the distribution and servicing of their products in northern and central California, with **George Dolan**, formerly plant manager for the Torrance factory of Joshua Hendy Iron Works, in charge.

Fred Lively has been appointed manager of the Connelly Machinery Company branch office in Great Falls, Montana. He succeeds **Van R. Howell**, who is taking over the management of a machinery business in Missoula, of which he will be a co-partner.

Osborne Machinery Company, San Francisco, has been appointed agent in the San Francisco territory for the Anker-Holth Manufacturing Company, Chicago, specialists in pneumatic and hydraulic applications, and manufacturers of "Airgrip" cylinders and chucks and the 3000lb. ½-hp motor, Hi-Po hydraulic pump.

Shaw and Company, exclusive agents for Republic Drill & Tool Co., and Rockford Screw Products Co., have opened offices and warehouse at 320 Tenth Street, San Francisco, where a complete stock of high speed twist drills will be carried.

Chris W. Griffin has been appointed manager of General Electric's newly established distributing branch in Los Angeles at 212 North Vignes Street.

A. J. Erickson has been appointed West Coast representative for the WHIZ Industrial Division, **R. M. Hollingshead Corp.**, Camden, N.J., operating from Hollingshead's Western Offices in San Francisco.

Moore Machinery Company, San Francisco and Los Angeles, has been appointed California sales representative for products of Sheffield Corporation, Dayton, Ohio, manufacturers of dimensional control equipment and precision products.

Joseph T. Ryerson & Son, Inc., have opened a district sales office in the Architects Bldg., Los Angeles, with Lee Bergstrom in charge.

William J. Cottrell, 131 S.W. 4th Ave., Portland, has been named representative for Graham Transmissions, Inc., Milwaukee, Wisc., builders of the Graham Variable Speed Drive.

E. G. Gustafson has been made assistant general sales manager, and **Robert I. Herndon**, Western sales manager, for California and Hawaiian Sugar Refining Company.

W. Earle Shumway has been appointed sales manager of the Western region by Norton Company, Worcester, Mass., succeeding R. M. Johnson, who has been appointed general sales manager.

J. Burke Tuthill has joined the Los Angeles laboratory staff of Kelite Products, Inc., to take up a research assignment in specialized applications of pH control to metal porcessing and cleaning. Tuthill, formerly an independent mining engineer, went to Kelite from the Utah ordnance plant of Remington Arms Company where he had been working as Control Chemist since the start of the war.

THE SHOWCASE

New Type File—A new type of file made of the same hard, high strength cemented carbide compositions as the Kennametal steel-cutting and boring tools. The company claims the new files will permit filing speeds of 3 to 10 times that possible with steel files and outlasts them 50 to 200 times. Since lathes have been "revved up" to speeds necessary for efficient performance of carbide-tipped cutting tools, the ability to file revolving work pieces without reducing speed will be a valuable aid to maintenance of production. Ordinary steel files, when used to remove burrs, for example, are said to break down at these high cutting speeds. One size is available now, 11 inches long, ¾ inch wide, ⅜ inch thick with a filing surface 4 inches long made of grade K4H Kennametal, single cut with teeth at 30° shear angle, 40 per inch. Convenient grips for the operator's hands are provided. *Kennametal Inc., Latrobe, Penna.*

Inset shows portion of filing surface actual size, unretouched.

Riggers' Forming Vise—P-M Portable Riggers' Forming Vise for splicing and clamping wire rope and cable for forming around the thimble or in forming slings is designed and built in such a manner that the shaft levers give complete and easy control of both front and back jaws. Wire rope or cable is securely held and formed in the vise, with guards to protect the acme screw threads from damage and friction of the wire rope. Construction assures strength and durability. Operations conducted in minimum length of time. *Patrick-McDermott & Co., Los Angeles, Calif.*

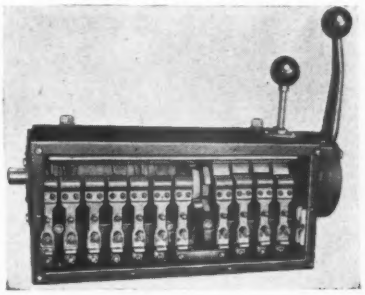
Glue—A new glue, Lauxite Hot Press Urea Resin ("8x9XC-U") can be used straight, with a fortifier, and with wheat flour of any gluten strength. Formerly it was necessary to have different glues for these three different type jobs. *I. F. Laucks, Inc., Seattle, Washington.*

Fountain Brush—D-B Streamliner fountain brush of plastic which is said to work with any type of stencil ink now on the market. This brush has a button control feature which will not come loose or be subject to damage as it is recessed in the housing of the brush flush to outside surface. Air is forced into the ink chamber which prevents a vacuum. A patented flange guide protects the tip from touching a table or bench if the brush is laid on the side, protects fingers from any ink and also clothing when carried in a pocket. *Diagraph-Bradley Stencil Machine Corp., St. Louis 8, Missouri.*

Lift Truck—A light truck on pneumatic tires, the HYSTER "20" Lift Truck, of 2,000 pounds capacity, is a gasoline powered fork type unit with a 25 h.p. four cylinder, V-type motor equipped with spark arresting mufflers. The 66 in. turning radius made possible by combined counterweight and trunnion wheel provides high degree of maneuverability. The pneumatic tires practically double the operating speed, permitting faster starting and stopping, smoother travel over rough ground, better traction for going up ramps and starting and stopping on wet or greasy floors and reduced floor maintenance. This lift truck has a wheel base of 45 in. with an overall length, not including load arms, of 71 in. and an overall width of 36 in. *Willamette Hyster Company, Portland 8, Oregon.*

Air Control Valve—Compact solenoid air control valve, Ross model No. 835, can be operated at sustained speeds up to 400 reversals per minute. It is a ¼" heavy duty, 4-way valve for the control of double-acting cylinders. Overall dimensions are: length 7", width 3½", height 5¼". Other features are low current consumption, noiseless operation and long life. *Ross Operating Valve Co., Detroit 10, Mich.*

Four-Speed Reversing Controller—A feature of the new M-79 Simplified Four-speed Reversing Controller for electric and gas-electric trucks is improved economy in current consumption. Experience in operation under war conditions has shown that when motor current is restricted by introducing resistance on first, second and third speeds, a wasteful amount of current can be consumed by running the truck for protracted periods on any of these three



speeds. A major portion of this possible waste is prevented by the M-79 Controller which uses resistance on the first speed only. An additional power saving is attributed to the manipulation of the motor fields, connecting them in series on first and second speeds, which produces greater torque with less current consumption. The welded housing of the new controller is dust tight and meets all specifications for flash-proofing. *The Elwell-Parker Electric Company, Cleveland, Ohio.*

Turret Tool Posts—Two new heavy duty models, HD-1 and HD-2 Turret Tool Posts are designed for large lathes doing heavy duty work where extreme rigidity and accuracy in the tool post is required. Both of these models have 12 position indexing, permitting three different working positions for each tool. One tool may be used for more than one operation which saves set-up and grinding time. *Enco Manufacturing Company, Chicago, Ill.*

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Combustion Control Equipment—A new system of combustion control applicable to boilers fired with coal, oil or gas is known as Type P. It continuously proportions fuel and air to steam demand and at the same time controls furnace pressure. To regulate fuel-feed and draft (either forced or induced), this system provides a simple electrical balance (using the Wheatstone Bridge principle) by which the settings of valves, dampers or vanes are varied in definite proportion to steam demand as directed by a Master Controller. The remaining draft damper or other device is simultaneously regulated by the Furnace Pressure Controller. *Leeds & Northrop Company, Philadelphia 44, Penna.*

Transformer—A new hermetically sealed transformer, designated "Type S," is designed for use on all types of equipment. It is of rugged construction, having a case of cold drawn copper cadmium plated steel. It uses a terminal molded into a plastic block which has a metal flange molded into its periphery. This flange is then soldered into the case. This construction offers flexibility in number and arrangement of terminals. As in all Peerless transformers, their exclusive "Vac-sealing" impregnation process is used, insuring impregnation without solvents or other deleterious material present inside the coil. The Type S transformer is available in any desired size or capacity to customers' specification. *Peerless Electrical Products Co., Los Angeles 1, Calif.*

Positioner—The Metro Positioner is a recently developed tool for holding or clamping work during production operations, such as checking, milling, drilling, shaping, boring, welding, filing, pattern making and similar work. It operates on a ball and socket principal and is quickly released or locked in position. *Metro-Vise Company, Detroit 2, Mich.*

Waterproof Cream—Cadet Waterproof Creme will protect skin areas from absorption and stain from dyes, against caustic and acid compounds in both dry and aqueous solutions, and will protect mucous membranes, such as the nasal septum and lips against irritant fumes encountered in welding. *Cadet Creme Co., Worcester 5, Mass.*

Electric Tachometer—Ideal's Self-Energized Electric Tachometer consists of a small generator coupled electrically to an electric meter. It is electrically and mechanically sturdy, has a rugged reliable meter and a generator separable from meter

The units may be used together as a "hand type" tachometer or for many applications including permanent mounting, the generator and meter may be separated, and connected only by a two conductor electric cord. *Ideal Commutator Dresser Company, Sycamore, Illinois.*

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Lockheed photo by Eric Miller

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1401

Equipment from Second-hand Cars—Three bulletins, Ryan Handy Man Hoist Car, Ryan Gas Truck Room, and Ryan Airplane Tow Car, are compiled to assist in construction of similar equipment. Faced with the shortage of materials, these three utility equipment items have been evolved through ingenuity of employees who designed and fabricated them from used equipment available at used car and salvage dealers. *Ryan School of Aeronautics, Lindbergh Field, San Diego 1, Calif.*

1402

Steel Price List—A complete, simplified price list containing all the data required to determine or check price of steel purchased from warehouse stock which will provide customers with as complete a price list as is possible and practical for the quick and accurate prices of all regular stock items. *Earle M. Jorgensen Company, Los Angeles 54, Calif.*

1403

Threaded Inserts and Locked-in Studs—Handy pocket-size installation manual, profusely illustrated, showing method of installation and removal of Rosan threaded inserts and locked-in studs. It also features the latest applications to problems of fastening and sealing. *Bardwell & McAlister, Inc., Hollywood 28, Calif.*

You owe it to yourself to keep posted—only the efficient business survives under the strain and pressure of the war effort. Literature listed in these columns may be just the answer to your need for greater production, substitute materials or knowledge of how to care for your equipment. Just drop a note to Western Industry, 503 Market St., San Francisco, and copies will be forwarded to you. If you do not use business letterheads, please name your company affiliation.

1404

Chain Belt Drives—Booklet "Wartime Care of Chain Belt Drives" gives information on Maintenance, lubrication and repair of chain belt drives to help users get the most out of their existing drives and save some costly delays and unnecessary expense. *Chain Belt Company, Milwaukee 4, Wisconsin.*

1405

Boss—Booklet "Qualities of a Good Boss" is a practical self-rating check-up for persons in supervisory positions and gives the reader an opportunity to rate himself on 15 outstanding qualities of a "good boss." Placed in the hands of either new or experienced foreman, it will give him an opportunity to examine his own foremanship qualifications and gives him a mark to shoot at; a revealing picture of his weak points, and a correct guide for self-improvement. At the end of the booklet is a "score sheet" whereby the foreman can get an overall picture of himself and determine his supervisory ability score. *Elliott Service Company, New York, N. Y.*

1406

Selectroslide—Pamphlet describing the Selectroslide, automatic slide changer and projector, showing how to operate, and giving condensed technical data. *Picto-Sound Productions, San Francisco, Calif.*

1407

Hints on Rope—Handy pocket-size booklet, "The Rope You Save Fights for You," contains suggestions on proper care of rope in order to prolong its life, gives information on government regulations affecting sale and use of cordage and tells how to make a short and a long splice. *Tubbs Cordage Company, San Francisco, Calif.*

1408

Control Valve—Bulletin 800 gives full details of Grove Flexflo Remote Control Valve identified as an "expansible tube type" valve, designed for cold fluid service. This compact valve can be operated hydraulically or pneumatically by various systems such as manual, electro-solonoid, mechanical or automatic remote control. *Grove Regulator Company, Oakland 8, Calif.*

1409

Talk-A-Phone—8-page catalog describes 15 different models of inter-communication, illustrating and explaining various features of the system. The Talk-A-Phone systems may be built up progressively beginning with one Master Station and one Sub-station. Additional substations can then be added as needed. *Talk-A-Phone Mfg. Co., Chicago 7, Ill.*

1410

Porthole Ventilator—Bulletin describing Portvente electric porthole ventilator for ships. It supplies, exhausts and recirculates air and can be blacked out for war conditions. Complete information including dimensions, specifications and performance graphs are included. *ILG Electric Ventilating Company, Chicago 41, Ill.*

1411

Acid-Type Detergent—Service report giving complete data on a new material, Oakite Compound No. 86, which does a three-in-one job in that it cleans, conditions and rust-inhibits metal surfaces for the firm bonding of subsequent paint, lacquer or other coatings. *Oakite Products, Inc., West Coast Div. Office, Los Angeles 12, California.*

1412

Marine Electrical Control Equipment—Bulletin 3100 describes, illustrates and lists all Square D Electrical Control Equipment meeting marine and naval requirements, also electrical equipment for use in yards and docks, plus typical shipboard layouts. *Square D Company, Los Angeles 21, California.*

1413

Electronic Tubes—Quick-selection chart of electronic tubes for industry is contained in a new 4-page bulletin ET-12. *Advertising Div., Electronics Dept., General Electric Company, Schenectady, N. Y.*

1414

Safety Goggles—Booklet "Right on the Nose" explains methods of adjusting non-prescription industrial safety goggles so workers can wear them in comfort and will help prevent eye accidents caused by workers refusing to wear improperly fitted safety goggles which may be uncomfortable to wear. *American Optical Co., Southbridge, Mass.*

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1415

Steel Cutting with Carbides—Manual GT-166, vest-pocket handy guide covers characteristics of different grades of carbides designed for steel cutting, selection of proper rake and relief angles, size of radius, etc. Also given are operating hints, Do's and Don't's on carbide tools and trouble-shooting suggestions. *Carboloy Co., Inc., Detroit 32, Mich.*

1416

Thread-Milling Cutter Sharpening—Handy pocket size technical manual, Bulletin HT-43, contains tables of equivalent offset distances for all angles of rake from 1° to 25° in 1° steps and for all sizes of cutters between 1/8 and 7 inch O.D. in 1/16 inch steps. Helpful suggestions on set-up, grinding, hook, lead and flute spacing checking, and prevention of run-out and other errors in sharpening of thread-milling cutters are included. *Detroit Tap & Tool Co., Detroit 11, Mich.*

1417

Import and Export—80-page book, "How to Import and Export," contains the proceedings of the Foreign Trade Clinic held in Los Angeles in 1943, and is timely aid to businessmen preparing now for postwar international trade. It gives helpful information on locating, obtaining, handling and financing local and wartime import and export business. *Los Angeles County Chamber of Commerce, Los Angeles, Calif.*

1418

Industrial Clutches—Four bulletins outlining merits of industrial clutches and couplings—the Hilliard Friction, Centrifugal, Single and Over-Running Clutches, lists in concise form what the operation of each individual clutch is designed to accomplish and pertinent information concerning mechanical details of each, also typical applications and their use. *The Hilliard Corp., Elmira, New York.*

Center Scope Brings Optical Precision to Machine Shop Operations

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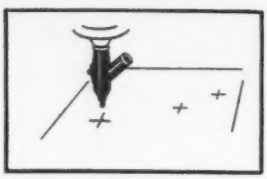
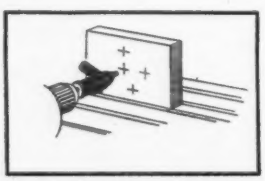
The Center Scope enables the operator to easily and quickly locate edges to a spindle axis, set-up faster and compensate for run-out. It saves vital hours in checking, inspecting and measuring when mechanical methods and tools are impossible to use. Its 45 x magnification allows operator to see ".001" and requires no technical knowledge or training to operate.

While there is nothing particularly new or ingenious about Wrigley's Spearmint gum, it is proving useful to millions of people in many new ways. Workers in war plants everywhere have found it helps keep them alert and relieves nervous tension and dry mouth while they are on the job.

You can get complete information from the Center Scope Instrument Company, 351 S. LaBrea Ave., Los Angeles, Calif., or Kearney & Trecker Products Corporation, Milwaukee, Wis.



ON A VERTICAL MILL—locating and centering height gauge or size block layouts. Permits jig borer accuracy on more machines.



ON A HORIZONTAL MILL—the ability to center a layout, edge block or rotary table plug while spindle is running. Permits quick and easy set-up for high precision work.

Y-109

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